



The 11th InTraders International Conference on Social Sciences and Education Proceeding Book

Editor

Assoc. Prof. Dr. Asena Boztaş

InTraders Academic Platform

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Asena Bostaş, Türkiye

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The 11th InTraders International Conference on Social Sciences and Education provide the Republic of Türkiye, Council of Higher Education "International Conference" criteria. The 11th InTraders International Conference on Social Sciences and Education (Hybrid) was held on 25-29 September 2023, İstanbul, Türkiye

Declaration

InTraders with this declare that from all participants coming from Chile, USA, Romania, Pakistan, India, Afghanistan, Kosovo, and Türkiye, more than half of the studies belong to countries different than Türkiye.

Appreciation

I am gratified to have the honour to put forward the vote of thanks to all the Congressional Coordinators, Congressional Committees, and Authors who provided intensive work performance for the Conference.

Special thanks to whom joined the opening ceremony participants.

OPENING CEREMONY

Kürşat Çapraz, InTraders Academic Platform, Türkiye

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Dr.Karuppasamy Ramanathan, Dean, School of Management, Hindustan University,
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The Congress is scheduled using Zoom Live Sessions and in person.

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Thank you for your great work, dear friends. Last, my little motivators, Emre and Yunus ÇAPRAZ, are great....

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The 11th InTraders Conference Program

GMT+3	25 September 2023	26 September 2023	28 Sept. 2023
Session 1: 10:00-10:40	Abstract No: 8-11-19-39 Abstract No: 17-4-5-25	Abstract No: 26-1-3-31	10:00-10:40 Workshop Dr.Karuppasamy Ramanathan, Dean
Session 2 11:00-12:00	Abstract No: 36-34-6-13	Abstract No: 33-9-12-20	
Session 3 13:00-13:40	Abstract No: 40-14-23-37	Abstract No:26-29-18-28	
Session 4 14:00-14:40	Abstract No: 24-38-15-41		
Session 5 15:00-15:40	Abstract No: 27-32-10-7		
Session 6 16:00-16:40	Abstract No: 35-30		

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3	Kenan Ateşgöz	Deepfake Technologies and the Credibility of News	Çukurova University, Türkiye
4	Zübeyde Er	Examining the Relationship Between Mathematical Thinking Skills and Critical Thinking Skills and Academic Achievement	Çukurova Science and Art Center, Türkiye
5	Hakan Eygü	Conceptual Analysis of the Relationship Between Loneliness and Depression in Adolescent Years	Atatürk University, Türkiye
6	Bushra Zulifiqar, Ghulam Subhani, Akmal Shahzad	Impact of Oil Price Volatility on Stock Price Volatility: Evidence from Emerging Countries	Arid Agriculture University, Rawalpindi, Pakistan Iqra University Islamabad, Pakistan

7	Leena Jenefa, Ashlin Nimo	AN EMPHASIS OF PERFORMANCE APPRAISAL ON TOP MANAGEMENT IN FINANCIAL SECTOR	Hindustan Institute of Technology and Science, Padur, Chennai, India Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, India.
8	Marinică Tiberiu Șchiopu	The Buddhist Intertext in Lucian Blaga's Poems	Romanian Language Institute, Romania & University of Delhi, India
9	Emrah Eray AKÇA	An Empirical Investigation on the Nexus between the Internet and Trade in Services	Bartın University, Türkiye
10	Albana Jeminaj, Mustafa Kadriaj	The quality of teaching as a competitive factor for driving schools in Kosovo	Business College Prishtina, Kosova
11	Halil Arslan, Temur Kayhan	The Effect of Changes in Tax Rate and Borrowing Cost on EV/EBITDA and P/E Multiples	Kırşehir Ahi Evran University Info Securities Corporate Finance Manager, Türkiye

12	Fatma Duman, Şefik Kartal	Classroom Teachers' Views about the Process of Teaching Mathematics via Distance Education	Öğretmen, Milli Eğitim Bakanlığı, Kayseri İl Milli Eğitim Müdürlüğü, Hakkı Altop İlkokulu, Kayseri, Türkiye, Tokat Gaziosmanpaşa Üniversitesi, Eğitim Fakültesi, Tokat, Türkiye
13	Ertan Beceren, Seçkin KABAK	Intra- Industry Trade Analysis Of Türkiye's Foreign Trade With Austria	Suleyman Demirel University, Kahramanmaraş Sutcu Imam University, Türkiye
14	Berna BALCI İZGİ, Ertan BECEREN	Feminist discourse, local governments and women NGOs: Gaziantep city council women's council initiative	*Gaziantep Univ.,Dept. Of Economics, Gaziantep/ Türkiye Süleyman Demirel Univ.,Dept. Of Economics, Isparta/ Türkiye
15	Punam Rattan, Sayed Elham Sadat	Web Application Vulnerabilities: Counter measures and Assessment Techniques	School of Computer Application, Lovely Professional University, Punjab, India Information Technology Department, Computer Science Faculty, Kabul Education University, Kabul, Afghanistan
17	İbrahim Hakan Göver	Internationalization in Higher Education in The Context of Center and Periphery Approach: Case of Kayseri	Abdullah Gül University, Department of Political Science and International Relations, Türkiye
18	Aybala Köseoğlu Yurdagül Meral	OLIVE MARKETING IN TÜRKİYE: A SWOT ANALYSIS OF OLIVE SECTOR IN TÜRKİYE	9.Eylül University Business School) İstanbul Medipol Üniversitesi, Türkiye
19	S. Waleck Dalpour	Fluctuations of Oil Prices in the Global Market	University of Maine at Farmington, USA

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25	INDRANIL GANGULY Rashmi Gujrati Hayri Uygun	Experiential Marketing: A Tool to Creates Intention to visit Wild Flower Hall, Shimla	KC Group of Institutions, India, Recep Tayyip Erdogan University, Türkiye
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The role of Emotional Intelligence in Leadership Effectiveness

K.Arockiam¹

Ramya. M²

Abstract

The success of the organization relies on the leadership, and the leader's success is based on his/her understanding the pulse of others and themselves, hence it is not easy in all the situations. In this situation Emotional intelligence facilitate one to assess the feelings of others. Therefore, the researchers have attempted to study the influence of emotional intelligence level on leadership effectiveness. The required data was collected from the managers and team leaders of software companies located at Chennai using purposive sampling technique, and the required 120 data was collected through structured questionnaire. The results of correlation and regression analysis explained, positive and significant relationship between emotional intelligence components and leadership effectiveness. The researcher further found that, among the factors of EI, empathy is the most influencing factor on leadership followed by socialization. Hence it is recommended to provide emotional intelligence training to the leaders, to make them more efficient.

Keywords: leadership, effectiveness, emotional intelligence

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1. Introduction

Leadership is the life blood of organizational success. The leader should have the capability to influence the followers and should make them to work smarter, even some times harder for the common goal of organization. It is the nature of human, to expect others to understand their problems and respect them. Therefore, the leader one who understand the feelings of others can only be the successful leader. Emotional intelligence allows leaders to positively influence their situation by creating an environment of open communication, enhanced trust and greater empathy (George, 2000). Easy communication and more trust on leader influence the performance and satisfaction of employee in turn it reflects on productivity, turnover (Gopinath & Chitra, 2020). Hence organisations started to recognise those benefits, they required emotional intelligence as the most requested quality of leader. The influence of emotional intelligence on leadership is proven (Ramchunder & Martins, 2014; Miller, 1999). The paper is further substantiated with volume of influence and most influencing factor among the factors of emotional intelligence

Emotional intelligence (EI) is the ability of recognizing and regulating emotions of self and others (Goleman, 2001). Peter Salovey and John Mayer (1990), who coined the term "emotional intelligence" defined emotional intelligence as “A form of intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions”. Later they redefined the definition as “The ability to perceive emotion, integrate emotion to facilitate thought, understand emotions, and to regulate emotions to promote personal growth” (Mayer & Salovey, 1997).

2. Review of Literature

According to Moore (2009), the emotions within any organizational environment may cause changes such as disruption, motivation or de-motivation, exhilaration, positive or negative, and can challenge the abilities of any person entrusted with the responsibility to lead change. An emotionally intelligent leader recognizes and understands his or her emotions as well as that of the subordinates and subsequently manages and redirects these emotions into a positive energy for change. Moreover, the leader with self-awareness have self-confidence, generally the followers observe the role of confident leader in implementing the changes. “The accurate expression of emotion ensures that people are able to effectively communicate with others to meet their needs and accomplish the goals and objectives”,

Jacobs et al. (2008) have made a study on the emotional health of teachers in South Africa, they have found that teachers need to be equipped with emotional intelligence to handle the difficult situations. Therefore, to build the capacity of world-class leaders for organizations or institutions, emotional intelligence is required and essential.

Issah (2018) in his study on “change leadership; the role of emotional intelligence” summarised the various perspective of emotional intelligence and the five components such as self-awareness, self-motivation, self-regulation, empathy and socialisation. He substantiated that emotional intelligence enable the people “to engage with staff, build commitment, forge working relationships, and increase staff-satisfaction”. Emotionally intelligent leaders were applying their skills in providing support and encouragement to change participants during the process of change.

Gardner and Stough (2002) have Examined the relationship between leadership and emotional intelligence in senior level managers. They have tested about transformational, transactional and laissez-faire leadership through multifactor leadership questionnaire from 110 senior level managers. Those who reported on transformational leadership were found effective rather than transactional behaviours. Emotional intelligence has high correlations with the components of transformational leadership. Further they highlighted about the usage of emotional intelligence in leadership selection and development were addressed.

The study of Sosik (1999) was to examine the moderating role of self-awareness the aspects of emotional intelligence and transformational leadership behavior, and also to investigate the association of transformational leadership behavior with managerial performance. the required data were collected from 63 managers (who responded about their emotional intelligence and transformational leadership behavior), 192 subordinates (who rated their manager's transformational leadership behavior and performance outcomes), and 63 superiors of focal managers (who rated managerial performance). Results indicated that correlations between emotional intelligence aspects, leader behavior, and performance varied as a function of self-awareness of managers.

2.1.Objectives

To analyse the relationship between emotional intelligence and leadership effectiveness

To study the influence of emotional intelligence on leadership effectiveness

2.2.Hypothesis

H0₁: There is no significant relationship between emotional intelligence and leadership effectiveness

H0₂: Emotional intelligence has no influence on leadership effectiveness

3. Research Methodology

This descriptive study was conducted among managers and team leaders of software companies located at Chennai. the study requires both primary and secondary data, the required primary data was collected through questionnaire. Denial Goleman's questionnaire for Emotional Intelligence and self-administered questionnaire for Leadership Effectiveness were distributed through mail to 200 respondents who were selected using systematic random sampling technique. The researcher has received 120 valid responses and they were considered for further analysis. in order to answer the objectives, the collected data were analyzed with correlation and regression using SPSSv23.

4. Analysis

RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND LEADERSHIP EFFECTIVENESS

4.1 Pearson Correlation Coefficient between factors of Emotional Intelligence and leadership effectiveness

Factors of Emotional Intelligence and Leadership Effectiveness	Self- Awareness	Managing Emotions	Motivating One-Self	Empathy	Social Skills	Leadership Effectiveness
Self-Awareness	1.000	0.631**	0.747**	0.647**	0.696**	0.617**
Managing Emotions		1.000	0.611**	0.633**	0.613**	0.686**
Motivating One- Self			1.000	0.605**	0.669**	0.615**
Empathy				1.000	0.665**	0.882**
Social Skills					1.000	0.737**
Leadership Effectiveness						1.000

**Correlation is significant at the 0.01 level (2-tailed).

Table 4.1 explains the relationship between emotional intelligence factors and leadership effectiveness. Since the p value explaining all the relationship is less than 0.01, hence the null hypothesis assuming no relationship is rejected at 1 per cent level of significance. Though, there is a positive and significant relationship between factors such as self-awareness, managing emotions, motivating self, empathy and social skills with leadership effectiveness.

Among the factors of emotional intelligence empathy has more relationship with leadership effectiveness followed by social skills and managing emotions.

INFLUENCE OF EMOTIONAL INTELLIGENCE ON LEADERSHIP EFFECTIVENESS

4.2. Multiple regression analysis

Multiple Regressions explains the statistical relationship between more variables. More than two (independent) variables is the cause of the behavior of another one (dependent) variable.

In this study on role of emotional intelligence in leadership effectiveness the dependent variable is leadership effectiveness, Independent variables are social skills, managing emotions, empathy, self-awareness, motivating one-self are discussed as follows:

Dependent variable :	Leadership Effectiveness (Y)
Independent Variable :	• Self-Awareness (X₁) • Managing Emotions (X₂) • Empathy (X₃) • Social Skills (X₄) • Motivating One-Self (X₅)

Multiple R value :	0.854
R Square value :	0.668
F value :	55.561

Variables	Unstandardized coefficients	SE of B	Standardized coefficients	t value	P value
(constant)	0.203	0.242	-	0.343	<0.001**
Self-Awareness	0.012	0.164	0.112	0.283	<0.001**
Managing Emotions	0.221	0.163	0.217	3.263	<0.001**
Motivating One-Self	0.301	0.183	0.252	3.836	<0.001**
Empathy	0.183	0.188	0.276	0.941	<0.001**
Social Skills	0.146	.056	0.271	3.368	<0.001**

** denotes 1% level of significance.

Table 4.2 briefs the influence of emotional intelligence factors on leadership effectiveness. The multiple correlation coefficient is 0.854 measure the degree of relationship

between the actual values and predicted values of Leadership Effectiveness. Because the predicted values are obtained as a liner combination of Self-Awareness (X_1), Managing Emotions (X_2), Empathy (X_3), Social Skills (X_4), Motivating One-Self (X_5). The coefficient value of 0.854 indicates the relationship between leadership effectiveness and all independent variables are significant and positive.

The coefficient of determination R-Square measures the goodness of fit of the estimated Sample Regression Plan (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, the value of R square is 0.668 which means 66.8 percentage variation in leadership effectiveness is explained by the estimated SRP that uses, self-awareness, managing emotions, motivating one self, empathy and social skills as independent variables and R square value is significant at 1 per cent level

The multiple regression equation is

$$Y = 0.203 + 0.112X_1 + 0.217X_2 + 0.252X_3 + 0.276X_4 + 0.271X_5$$

Hence the coefficient of X_1 is 0.112 represents the positive effect of Self-Awareness on leadership effectiveness, holding the other variables as constant, leadership effectiveness increases by 0.112 per cent for one percent increase in self-awareness. The coefficient of X_2 0.217 represents the positive effect of managing emotions on leadership effectiveness. Holding the other variables as constant, the estimated positive sign implies effectiveness would increase by 0.217 for every unit of increase in managing emotions and this coefficient value is significant at 1% level.

The coefficient of X_3 is 0.252 represents the positive effect of motivating self on leadership effectiveness, holding the other variables as constant. The estimated positive sign implies that leadership effectiveness would increase by 0.252 for every unit of increase in motivating self and this coefficient value is significant at 1% level. The coefficient of X_4 is 0.276 represents the positive effect of empathy on leadership effectiveness. Holding the other variables as constant the estimated positive sign implies that leadership effectiveness would increase by 0.276 for every unit of increase in empathy and this coefficient value is significant at 1% level. The coefficient of X_5 is 0.271 represents the positive effect of social skills on leadership effectiveness. Holding the other variables as constant the estimated positive sign indicates, leadership effectiveness would increase by 0.271 for every unit of increase in Social skills and this coefficient value is significant at 1% level.

Based on standardized coefficient empathy, social skills and motivating self were the most contributing factors to leadership effectiveness and self-awareness is found to be the least contributing factor.

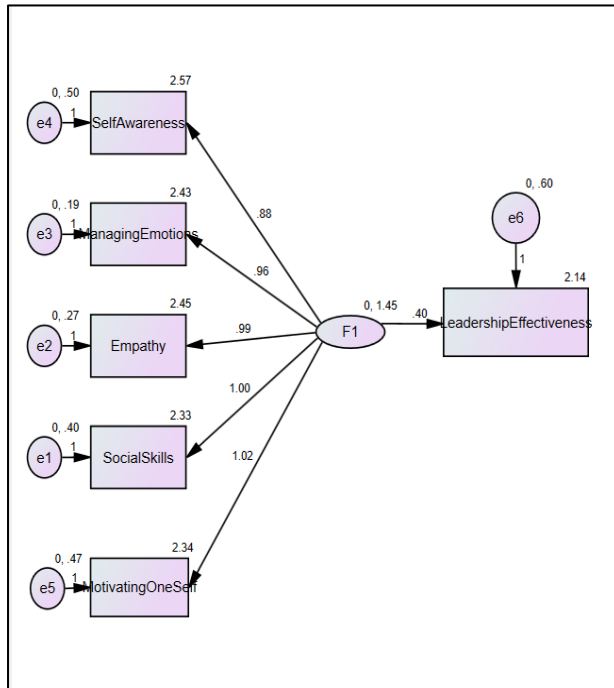
Influencing Factors in SEM Analysis

			Estimate	S.E.	C.R.	P	Label
SocialSkills	<---	F1	1.000				
Empathy	<---	F1	.986	.064	15.354	***	
ManagingEmotions	<---	F1	.955	.059	16.176	***	
SelfAwareness	<---	F1	.882	.071	12.488	***	
LeadershipEffectiveness	<---	F1	.401	.064	6.296	***	
MotivatingOneSelf	<---	F1	1.018	.074	13.756	***	

SEM was carried out to find the fit of the developed conceptual model. The variables used for the analysis include:

The effectiveness of leadership was considered as the observed, endogenous variables, and the factors influencing passenger preference were considered as observed exogenous variables. The number of variables in the SEM for the model is 13, the number of observed variables is 6, the number of unobserved variables is 7, the number of exogenous variables is 7, and number of endogenous variables is 6. The factors that are used for the study are found to be significant. The C.R. represents construct reliability.

SEM on Factors Influencing Effectiveness of Leadership



The SEM on Factors Influencing Effectiveness of Leadership is depicted in Figure. The Confirmatory Factor Analysis, reliability, and validity analysis were performed to assess the adequacy of the measurement model. More than one goodness of fit index was used to evaluate the model fit of the proposed model. The variables identified fit well with the factors influencing effectiveness of leadership. Among the 5 factors, the most important factor that decides leadership effectiveness is what makes the difference.

Goodness of Fit Statistics on the factors that influence the effectiveness of leadership Values
Desired range of values of a good fit

Goodness-of-fit Statistics -IFSQ on CS		Values	Desired range of Values for a good fit
Chi-square test	CMIN	98.792	P<0.001
Absolute Fit Measures			
Degrees of freedom	Df	21	>=0
Chi-square / degrees of freedom ratio	CMIN/Df	4.704	2 to 5
Goodness of fit index	GFI	0.871	>0.90
Root mean square error of approximation	RMSEA	0.254	<0.08
Incremental fit measures			
Adjusted good-of fit index	AGFI	0.863	>0.90
Tucker-Lewis index	TLI	0.873	>0.90
Comparative fit index	CFI	0.873	>0.95
Normed fit index	NFI	0.864	>0.90

5. Findings

The results of correlation analysis found positive and significant relationship between emotional intelligence factors such as self-awareness, managing emotions, empathy, social skills, motivating one-self on leadership effectiveness. Among the five factors, empathy is found to be the most related factor followed by social skills. The regression results are in line with correlation analysis, it also indicates significant influence of emotional intelligence factors on leadership effectiveness and empathy has more influence in determining leadership effectiveness.

6. Conclusion

Efficiency of the leader is the determinant of success of an organisation and it paves way to ensure better relationship among employees. Since leadership has this much prominence, organisations are striving to improve the leadership effectiveness. The research results reveal that, emotional intelligence has positive and significant influence on leadership quality of an individual. Hence it is suggested that, organisations should arrange training on emotional intelligence so that it will increase the efficiency of the leaders.

Reference

1. Gardner, L., & Stough, C. (2002). Examining the relationship between leadership and emotional intelligence in senior level managers. *Leadership & Organization Development Journal*, 23(2), 68–78. <https://doi.org/10.1108/01437730210419198>.
2. George, J. M. (2000). Emotions and Leadership: The Role of Emotional Intelligence. *Human Relations*, 53(8), 1027–1055. <https://doi.org/10.1177/0018726700538001>.
3. Gopinath, R., & Chitra, A. (2020) Emotional Intelligence and Job Satisfaction of Employees' at Sago Companies in Salem District: Relationship Study. *Adalya Journal*, 9 (6), pp. 203-217
4. Jacobs, S., Kemp, A., & Mitchell, J. (2008). Emotional intelligence: Hidden ingredient for emotional health of teachers. *Africa Education Review*, 151, 131-143. doi:10.1080/18146620802144842
5. Mayer, J.D., and Salovey, P. (1997), What is emotional intelligence? In Salovey, P. and Sluyter, D.J. (Eds), *Emotional Development and Emotional Intelligence: Implications for educators*, Basic Books, New York, NY.
6. Mohammed Issah (2018). *Change Leadership: The Role of Emotional Intelligence*. SAGE, 1(6), <https://doi.org/10.1177/2158244018800910>.
7. Moore, B. (2009). Emotional intelligence for school administrators: A priority for school reform? *American Secondary Education*, 37(3), 20-28.
8. Ramchunder, Y., & Martins, N. (2014). The role of self-efficacy, emotional intelligence and leadership style as attributes of leadership effectiveness. *SA Journal of Industrial Psychology*, 40(1). <https://doi.org/10.4102/sajip.v40i1.1100>.
9. Sosik, J. J.; Megerian, L. E. (1999). *Understanding Leader Emotional Intelligence and Performance: The Role of Self-Other Agreement on Transformational Leadership Perceptions*. *Group & Organization Management*, 24(3), 367–390. doi:10.1177/1059601199243006.

The quality of teaching as a competitive factor for driving schools in Kosovo

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Abstract

The purpose of this paper is to identify and analyze the factors that affect the quality of service and training for vehicle drivers, a challenge in learning and training which is reflected on the quality of driving, causing accidents up to fatality. The methodology used includes the analysis of adequate literature, research, various relevant reports, interviews with candidates and experienced drivers, research, and analysis of internal and external data of driving schools. The results show that factors such as compliance with customer expectations, the performance of internal processes, communication with customers, and staff responsibility significantly impact the quality of service, reflecting the quality of driving. As a result of the relevant information, we suggest the need for greater focus on candidate awareness, process improvement, and staff engagement to improve the quality of service and adequate training for candidates. Recommendations suggest employee training and performance monitoring to improve service quality management in driving school teaching performance.

Keywords: Public institutions, Education in Kosovo, professional driving schools.

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Definition and role of management in service quality

Economies also have an Achilles heel. Until recently, many professionals have tried to ignore or deny this weakness – but it can ultimately be treated as the cause of many of the glaring mistakes that economists have made for hundreds of years. (Conway, 2015, p. 186). According to one definition, knowledge management is the process by which schools and educational programs control what is considered valuable knowledge, along with the methods through which it is recognized as such, while it prevents evasive interpretations. At the foundation of knowledge management lies the finding of ways and methods for its benefit. (Kabashi, Shehu, Lama, 2015, p. 479). While quality as an essential property, a special feature, that distinguishes an object or a being from other objects or beings and that gives us the opportunity to recognize and appreciate it. The quality can be assigned individually to a certain item or a group of items identified for a specific quality, e.g. by the known manufacturer. Physical and moral quality. (Kasumaj, 2019, p. 107). Also, quality is seen as an important element in determining a service offer. It constitutes a significant basis that clients use to differentiate competing services. Definitions: such as "Adaptation to requirements"; "Adaptation for use"; based on satisfying customer needs. Quality can only be defined by consumers and is encountered when an organization provides specified goods or services that satisfy their needs. The complexity of services leads to a complexity of their quality. The quality of services is a desired objective of the company and an impetus for increased performance. In order to improve quality, one must first define what it is. Quality, as perceived by consumers, is important. (Qaushi, pp. 1,2) Service quality management provides a competitive advantage by consistently delivering higher quality than its competitors. Service quality always varies depending on the interactions between employees and customers. (Qaushi, p. 34) Excellence in customer service is the hallmark of success in service industries and among product manufacturers that require reliable service. But what exactly is a great service? It's the ability to deliver what you promise, the authors say, but first, you need to determine what you can promise. Relying on seven years of service quality research, they construct a model that, by balancing a customer's perception of the value of a particular service with the customer's need for that service, provides brilliant theoretical insight into customer expectations and delivery of service. (Zeithalm). Excellent service is not a dream; it is possible to overcome the conditions that promote mediocrity of service. The key is for true service leadership at all levels of an organization—leadership that provides direction and inspiration to support dedicated servers. Management is not enough. Service work can be difficult and demoralizing. Customers can be rude. Company policies can

be stifling. The sheer number of customers to serve can be overwhelming. End-of-day fatigue can be desensitized. Over time, many service workers tire of the service role and become less effective with customers, even as they gain technical experience that should produce the opposite result. (Zeithalm, pp. 12,13). Although some authors mean different processes by the notion of decision-making, it must be said that decision-making is more closely related to management. The relationship between management and decision-making will be better understood through the various definitions of decision-making, which are based on governance (management). For the largest number of authors who deal with the problem of organization and management, decision-making is the foundation of governance. Thus, for example, I. Turk understands decision-making as the essence of governance. For M. Novak, decision-making represents the basic constitutive element of governing activity. For M. Novak, decision-making represents the basic constitutive element of governing activity. D. Gorupiq is of the opinion that to govern with the enterprise means to decide. For F.Lipovic, governance and decision-making are two sides, substantive and methodological, of a single governance process. For Zh. Kostić, the governance of the enterprise is the making of decisions. For all the cited authors, it is common, therefore, to equate the decision-making process with the complex function of governance. From the analysis of the decision-making process, which goes through the stages: initiative, decision preparation, decision-making, implementation, and control, it is evident that the decision-making process is.

(Sikavica,Bebek,Skoko,Tipiroc, 2008, pp. 11,12)

The differences and commonalities of educational leadership and management

Cuban (1988) provides one of the clearest distinctions between leadership and management. He associates leadership with change, while management is seen as a maintenance activity. He also emphasizes the importance of both dimensions in organizational activity:

Through leadership, we understand the influence on the actions of others to achieve the desired goals. Leaders are people who shape the intentions, motivations, and actions of others. Often they initiate changes to achieve current or new goals....leadership...requires...a lot of initiative, energy, and skill. Management is the efficient and sustainable maintenance of organizational arrangements. While management often expresses leadership skills, the overall function leans more toward maintenance than change. Both management and leadership should be valued equally and should not be evaluated one above the other because different situations require different reactions. (Bush, 2017, pp. 23,24). Good managers are not necessarily good leaders,

while good leaders can be poor managers. This is because these are two different jobs, although they have similar characteristics, mainly to put the human skills of the firm in motion. As Warren Benisi and Bart Nanusi pointed out in 1985, "Managers do the right thing, leaders do the right thing." Leaders influence the competitive environment around them through the vision and strategy they construct, while the job of managers is to successfully implement the strategy. Effective management is essential to the success of the firm. Managers take care of the processes, planning, budgeting, structuring, and hiring—the work that helps the firm do what it does. No matter how well-run a business is, without good management, it is destined to end in chaos. But managing a firm should not be confused with leadership. Managers do not lead the firm down new paths. (Limited, pp. 68,69). Henry Ford sensed that there was a gap in the market for cheap cars that ordinary Americans could buy. The Model T Ford was produced in 1908 and was still in high demand 20 years later. During this period, Ford constantly improved this car. Thus, even after the improvements, Ford did not increase the price of the car. In fact, it did the opposite by lowering the price every year. Ford realized it had to give more for less. When he realized savings in the production line, instead of thinking about increasing the profit per unit, he lowered the price of the car. Successful firms manage to attract customers by selling them high-quality goods at reasonable prices. If the price covers the cost, the strategy of giving more for less is very effective. Prices that provide customers with good value for money to keep competitors at bay. (Limited, pp. 288,289). Starting from the principle "If the customer is king, then let's bow to him". Consumer behavior refers to the mental and physical acts, including their motives and causes, of individuals and groups in relation to the orientation, purchase, use, and maintenance of goods and services from the private or public sector toward the fulfillment of consumption needs and achievement of values, happiness, and satisfaction. The behavior, meanwhile, can be premeditated and deliberate or just random. For consumer behavior, not only purchasing acts are important but also the motives and reasons that lead to them. Brand loyalty appears when, as a result of successive purchases, the buyer, based on previous experience, buys the brand that is already the most satisfactory for him. (Duke, 1999, pp. 3,7). The customer's perception of the value of a product or service is directly related to the question that marketers ask when setting a price, "How much are customers willing to pay for this product?". In fact, this is one of the most important price factors. In terms of the quality of a product or service, it is usually seen as a proportional relationship between quality and price. That is, high prices are often seen as synonymous with high quality. (DTU, 2019).

Research and problem analysis

The term Patent, according to the dictionary of the Albanian language published by the Academy of Sciences of Albania, means a document that recognizes the copyright for an invention or for the way a device works, a document that is provided to someone who completes a course and that allows him to practice a trade, drive a vehicle, etc... Medical license, car license. (Samara, Haxhillazi, Shehu, Feka, Memisha, Goga, 2006, p. 763). According to the Oxford Dictionary, a patent is the grant of an exclusive right to exploit an invention. In the United Kingdom, patents are granted by the Crown through the Patent Office, which is part of the Department of Trade and Industry. An applicant for a patent (usually by the inventor) must show that the invention is new, unprecedented, and capable of industrial application. (Oxford, 2003, p. 380). Learning organizations are neither indifferent nor trying to dominate their environments. Rather, they learn to live alongside them interactively. Constant change is always introduced into these relationships because widespread interactions under conditions of dynamic influence require constant attention and movement. The forces of change are seen as inevitable and essential to learning and development. (Fullan, 2010, p. 118). The Right Mind Set – To succeed, all great organizations need a foundation base: a strategic approach, leaders to maintain unity and drive things forward, and a team to implement plans. But these blocks, while essential in themselves, are not enough. What ultimately distinguishes successful people from the rest is the way they feel and think and how they turn their thoughts and feelings into actions to achieve their goals. Even if you had the best strategy, with a perfectly capable leader and team, without the right mindset, they would be worthless. It is important to understand that the "right mindset" is not about having a certain type of skill or level of intelligence. It is about the attitude you take towards a particular challenge, and how you use and develop the qualities you have to have maximum impact in dealing with that challenge. Technical skills go a long way, and mindset is what comes into play through the qualities a winner looks for mental strength, determination, resilience, the ability to react appropriately to failure, and the ability to withstand pressure. (Campbell, 2015, pp. 155,156). Competitor analysis—although selecting competitive environments that favor the potential for profit is an important aspect of competitor analysis, it has been shown to be equally important for businesses to develop a strong competitive position in the markets in which they compete. To understand the level at which a business has a position of competitive advantage, we must look at it in a detailed analysis of competitors. An important question is: which competitor would analyze a business? We want

to support a very broad market definition to include all competitive substitute products that make sense, but at the same time, a business cannot engage in a detailed analysis of every competitor. Thus, we need a mechanism that will help us identify a group of important competitors to prioritize those competitors that we will analyze and have as a reference point. (Tartaraj, Myftaraj, Llazo, 2016, pp. 335,336). The research methodology is part of the research that defines the strategy and steps used to conduct a structured and valid study. The methodology used in this paper is the quantitative method, where with the sample of a population, by means of the questionnaire we collected the necessary information that interests us regarding this topic. With the research found, I will be able to measure the competitiveness as well as the quality of services in the field of driver's licenses or driving schools. The population sample that participated in this study is 40 leaders of regional driving schools in Pristina, Podujevë, Drenas, Lipjan. Research instruments - This includes issues related to the development, structuring, and implementation of the questionnaire process with driving school leaders. The method of collecting information, as mentioned above, is through a questionnaire. A total of 40 questionnaires was distributed, of which 30 answered the questionnaire. Regarding the construction of the questionnaire, it is structured into two main sections, with 5 questions in total. The first section contains general information on the type of commercial or manufacturing service business. The second section contains questions on organizational culture, clientele, methods, and approach. In this questionnaire, the target will be service businesses - driving schools, the questionnaire is anonymous.

The questions presented in the questionnaire are:

1. What kind of business are you a merchant or manufacturer?
2. What services do you offer?
3. How do you reach the clientele?
4. What types of services do you offer?
5. How do you approach people with special emphasis on disabilities?

A total of 30 respondents answered the questionnaire and 5 did not answer the questionnaire sent. According to the data, it turns out that:

1. All subjects are service businesses that provide training services to candidates for driving vehicles.

2. The subjects in question offer training services for leaders from the theoretical as well as the practical part.

3. Reaching the clientele according to 5 subjects answered that they reach the client through relatives, 7 others answered that they reach the client through the references of their clients as well as 18 others through the Internet, social networks, and websites such as customer references.

4. The types of services they offer are divided into categories, of which 18 offer services only for the "B" category, which includes training for automatic and manual cars, while another 8 for the "B" category, also automatic and manual, as well as the category "C", 4 entities offer candidate training services for all categories "A", "B", "C", "D".

5. As for persons with disabilities, only one entity or driving school is equipped with special vehicles for the training of persons with disabilities, while other entities treat easier cases of this category with automatic vehicles.

Chart 1: Reaching the clientele

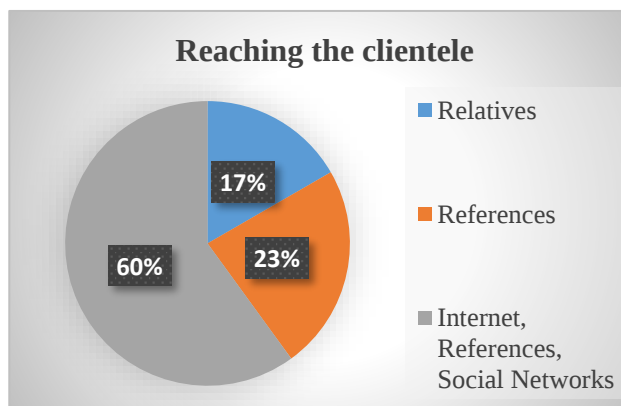
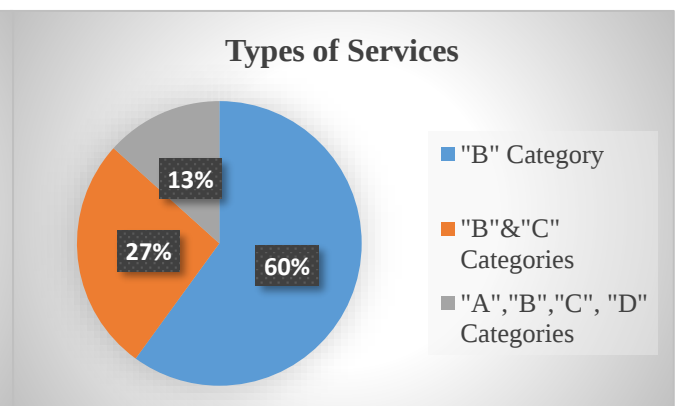


Chart 2: Types of Services they



offer

Source: Authors

The organization of the research on this topic started with the definition of the topic, finding the sources, the methodology of the topic research, the goals, the compilation of the questionnaire, and the analysis of the case study. Driving schools have been operating since 1999 as an individual business (B.I), Limited Liability Company (SH.P.K), registered at the Business Registration Agency in Kosovo with a unique identification number (nine digits), and are service businesses that provide training services for candidates, from the theoretical and

practical part in the field of driver's license. They are licensed in all categories starting from A, B, C, D, E,... For training candidates from the theoretical and practical part. They work with qualified staff with valid licenses issued by the Ministry of Infrastructure, the driver's license branch. The work experience of the instructors is at least 5 years. (<https://www.facebook.com/profile.php?id=100063571901002&sk=reviews>, 2019). The process of training candidates in the driving school is divided into two parts, the theoretical part and the practical part. First, the process starts with the registration of the candidate, where the candidate must have an identification tool issued by the Republic of Kosovo, a letter of notification or a passport, as well as a medical certificate issued by institutions licensed by the relevant ministry. After the candidate registers at the driving school, he gains the right to follow the lectures or the theoretical and practical part or the driving part. The theoretical part contains 20 lessons with a total of 9 teaching chapters. After completing the theoretical part, the candidate continues with the practical-driving part. The practical part also contains 20 hours of driving with a total of 12 lessons, including 7 hours in the driving polygon and 13 hours in the city and other parts, according to the program plan. After completing the theoretical part and the practical part in a total of 40 hours, the candidate is ready to take the theoretical driver's license test. For the theoretical test, the driving school issues a certificate that the candidate has successfully completed the procedures at the driving school, then the candidate submits the theory test, after successful completion of the theory test the candidate gains the right to undergo the practical driving test. Upon successful completion of the driving test, the candidate applies for a driver's license card after 48 hours and within 14 days; the candidate is provided with a driver's license issued by the Ministry of Internal Affairs of the Republic of Kosovo. (<https://www.facebook.com/profile.php?id=100063571901002&sk=reviews>, 2019) According to the Ministry of Internal Affairs, the documents and procedures for obtaining a driver's license in the Republic of Kosovo for the first time and adding categories after passing the exam, The legal basis is Administrative Instruction (MIB)-No. 02/2017- For the procedure of obtaining a driver's license of the Republic of Kosovo. The request for equipment with a driver's license for the first time or addition of categories after passing the exam is made personally by the applicant at the Center for Equipment with Documents - MIA. The following documents are required:

- Copy of the exam passing certificate;
- A copy of the valid ID, while for foreign citizens a copy of the residence permit;

- A copy of the driver's license in case the categories have been added, in case of loss, the police report must be submitted. (<https://mpb.rks-gov.net/f/43/Pajisja-me-patente-shofer>, n.d.)

Conclusions and recommendations

The quality of services is an important element in defining a service offer. Quality is the main issue that clients use to differentiate competitive services. Therefore, this paper aims to be an additional contribution to the literature on this broad topic, because there is a strong need for such topics in our society. In this time of rapid technological development and frequent changes in customer preferences, managing service quality is a complex challenge. Service quality management aims to provide an excellent experience for customers, increase the reliability and reputation of the organization and create competitive advantages. In this context, this study aims to shed light on the main aspects of service quality management and to determine best practices in the field of innovation and service quality improvement. Through literature analysis, case studies, and general data analysis, we aim to bring our contribution to this field and offer recommendations to driving schools that wish to improve service quality management. The conclusions of the study of this topic in service quality management are the result of data analysis and its interpretation. These conclusions are based on the results of the study and summarize the main findings that have been reached.

Recommendations:

- Focus on the customer experience and ensure that all aspects of the service are oriented towards the customer's needs and expectations.
- Increase employee involvement and responsibility: encourage employee involvement and responsibility in service quality management.
- Use appropriate methods to assess service quality, such as surveys, interviews, surveys, customer feedback, and data analysis.
- Identify key internal processes that affect service quality and improve them.
- Communicate and listen to customers: Make sure you have open channels of communication with customers and actively listen to their comments, suggestions, and complaints. Use this information to identify ways to improve service quality and meet customer needs.

Reference

- Bush, T. (2017). Development of leadership and management in education. Pristina: University of Pristina.
- Campbell, A. (2015). Winners and how they achieve success. Tirana: UET Press.
- Chronbach, L. (a.d.). Wikipedia. Found on Wikipedia: https://en.wikipedia.org/wiki/Cronbach%27s_alpha
- Conway, E. (2015). 50 Economic Ideas That Everyone Should Know. tyrants: PLEIADS.
- DTU. (2019, February 26). Department of Management Engineering. Found at Department of Management Engineering: http://wiki.doing-projects.org/index.php/Project_Management:_Cost_vs._Price
- Duke, A. X. (1999). Consumer Behavior. Tirana: University Book Publishing House.
- Fullan, M. (2010). The Force of Change. Tirana: Center for Democratic Education.
- <https://mpb.rks-gov.net/f/43/Pajisja-me-patente-shofer>. (a.d.).
- <https://www.facebook.com/profile.php?id=100063571901002&sk=reviews>. (2019). Titi driving school. Found on Facebook.
- Kabashi, Shehu, Lama, S. (2015). Explanatory glossary of emergency management terms. Prishtina: College of Business.
- Kasumaj, S. (2019). Glossary of justice terms. Pristina: Albanological Institute.
- Limited, D. K. (a.d.). Book of Business. London: Dorling Kindersley Limited.
- Oxford. (2003). Dictionary of Business. London: Oxford Press.
- Qaushi, A. G. (a.d.). Quality of Services. Pristina, Kosovo.
- Samara, Haxhillazi, Shehu, Feka, Memisha, Goga, M. (2006). Albanian Language Dictionary. Tirana: Academy of Sciences of Albania, Institute of Language and Literature.
- Sikavica, Bebek, Skoko, Tipiroc, P. (2008). Business Decision Making. Pristina: University "Victory" Pristina.
- Tartaraj, Myftaraj, Llazo, A. (2016). Marketing Direction. Tirana.
- Zeithalm, V. A. (a.d.). Delivering Quality Service.

Rare Earth Extraction and Processing, Efficiency, Costs and Environmental Risks

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I.- Overture

This is one of our main goals at the Faculty of Engineering, Architecture and Design. Universidad San Sebastián. Bellavista 7. Santiago. Chile is to seduce our students to carry out some research while doing the latest requirements to obtain the title of Civil Engineering major in Mining. Chile, our country, based its economy mainly on the extraction and processing of both metallic and non-metallic resources. A great deal of research has been done focused on Copper (Z=29) since we are well known all over the world as a country with a substantial resource of this metallic material. The importance of copper is without any discussion of paramount importance for our country and its development. The export of this refined material is one of the main sources that contribute to the gross domestic product. We have noticed the importance of our materials, known as rare earth elements, due to their technological and scientific uses; there is an urgent demand to optimize practices in the extraction and processing of rare earth, which is vital for Chile's sustainable advancement. However, there are challenges such as efficiency, cost reduction and minimizing environmental impacts.

This research paper examines the technical and economic aspects of obtaining rare earths in Chile. Emphasis is placed on assessing socio-economic and environmental impacts and promoting equitable solutions for industry, environment, and society. This research covers everything from prospecting to advanced analysis techniques, seeking to provide a complete picture guiding informed decisions on rare earths. Chile, for its mineral wealth, has the potential to be a leader in this field. Given the relevance of these lands for the Chilean future, we urge the scientific community to engage in sustainable proposals for this industry.

In the contemporary economic context of Chile, where exploitation and innovation in both metallic and non-metallic resources represent fundamental pillars, there is a growing need to review and improve practices related to the extraction and processing of rare earths. These elements, widely integrated into various technological and scientific applications, have become essential for the country's progress and sustainable development. However, with great opportunities come also great challenges: how to extract and process these materials efficiently, minimize costs and, most importantly, minimize environmental risks.

It is of paramount importance to observe that there are several very costly techniques to obtain rare earths and to become competitive in the global market. We believe that our students have the capacity and the wish to undertake substantial work to improve the quality of our products.

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Aplicaciones y productos	Tierras Raras
Aleaciones metálicas: -Acero -Almacenamiento de hidrógeno (baterías recargables, pilas de combustible) -Aluminio -Hierro fundido -Magnesio -Sílex -Superalloys	Lantano, Cerio, Itrio, Iterbio
Catalizadores: -Aditivos para diésel -Lavadores de gases industriales -Procesos químicos -Refinación de petróleo	Cerio, Neodimio, Lutecio
Cerámica: -Condensadores -Sensores -Colorantes -Centelladores	Holmio, Itrio
Electrónica: -Cámaras -Fósforos de pantalla (CRT, PDR, LCD) -Fósforo de imágenes médicas -Laptops -Láser -Fibra óptica -Sensores ópticos de temperatura -Teléfonos móviles	Europio, Terbio, Erbio, Holmio, Tulio, Iterbio, Prometio, Neodimio, Praseodimio, Disprosio
Imanes: -Actuadores -Aleaciones magnetostrictivas -Auriculares -Cojinetes sin fricción -Disco de almacenamiento magnético -Generación de energía -Micrófonos y altavoces -Motores -Piezas de automóviles -Refrigeración magnética -Sistema antibloqueo de frenos -Sistemas de comunicación, de accionamiento eléctrico y capacidad de propulsión -Tubos de microondas de potencia -Unidades de disco	Lantano, Praseodimio, Neodimio, Samario, Gadolinio, Terbio, Disprosio, Cerio,
Vidrio: -Compuestos de pulido -Vidrio óptico -Espejos térmicos de control -Colorantes-decolorantes	Cerio, Lantano, Neodimio, Europio, Holmio
Otros: -Fertilizantes -Iluminación fluorescente -Pigmentos -Revestimientos -Tratamiento de agua -Trazadores médicos	Tulio, Escandio,

Figure 2: Rare earth applications and products. Adapted from "Rare earth: a strategic sector for the technological development of China", J. I. Martínez and A. V. del Valle, 2014, CECHIMEX Workbooks, p. 5 (<https://dusselpeters.com/CECHIMEX/CuadernosdelCechimex20146.pdf>). All rights are reserved for 2014 for Universidad Nacional Autónoma de México.

Extraction of the elements is costly and has potential environmental impacts, such as water and soil contamination. With regards to the components and classification of rare earths, it is important to note the following: rare earths are composed of several elements with some properties. The most common in exploitation are carbonatites and carbonated igneous rocks, which are unique in that they are the only igneous rocks composed predominantly of carbonated

minerals rather than silicates. At the composition level, carbonatites usually have more than 50% of carbonates. The main minerals in carbonatites (These are unusual igneous rocks that are dominated by carbonate minerals. The main minerals found in carbonatites include:

(A) **Calcite** $CaCO_3$: This is the most common carbonate mineral in carbonatites.

(B) **Dolomite** $[(Ca, Mg)CO_3]$ Some carbonatites are rich in dolomite.

(C) **Ankerite** $[(Ca, Fe, Mg, Mn)(CO_3)_2]$ This is another carbonate mineral occasionally found in these rocks.

In addition to these carbonate minerals, carbonatites can contain a variety of accessory and rare earth minerals, some of which are of economic interest because they are sources of rare earth elements and other valuable metals. Some examples are as follows:

(D) **Bastnasite**: A primary source of rare earth elements

(E) **Apatite**: A source of phosphorous

(F) **Pyrochlore**: A source of Niobium

(G) **Perovskite**: A source of Titanium.

The exact mineralogy of a carbonatite can vary widely depending on its specific geological context and history.

In summary, it is important to note that carbonatites are of economic interest because they often contain rare earth minerals, which are essential for many modern technologies. In addition, carbonatites may contain niobium, tantalum and phosphates. In addition, it may be of interest to state that mining tailings contain solid waste. The tailings are the byproduct of Mining that results from the process of mineral beneficiation. After extracting most of the useful metal or Mineral from the ore, what remains is an aqueous pulp of fine ground minerals and chemicals used in the benefits process.

This pulp usually contains **Solid particles**: These are mainly minerals that are not economically viable to extract. These particles can range in size from very fine particles to thicker grains. **Water**: Tailings have a high-water content as they come mainly from processes that use water for flotation or leaching. **Chemicals**: Depending on the benefits process, tailings may contain residual reagents, such as flotation reagents, acids, or alkalis.

In general terms, mines usually dispose of them in tailings reservoirs or tailings deposits, where the solid material settles, and the water is, in some cases, reused or treated before being released into the environment.

Over time, the water content in the tailings decreases, and what remains is a solid residue. These wastes can present environmental and safety challenges, so their proper handling and storage are essential.

Figure 3 shows the distribution of tailings and their state.

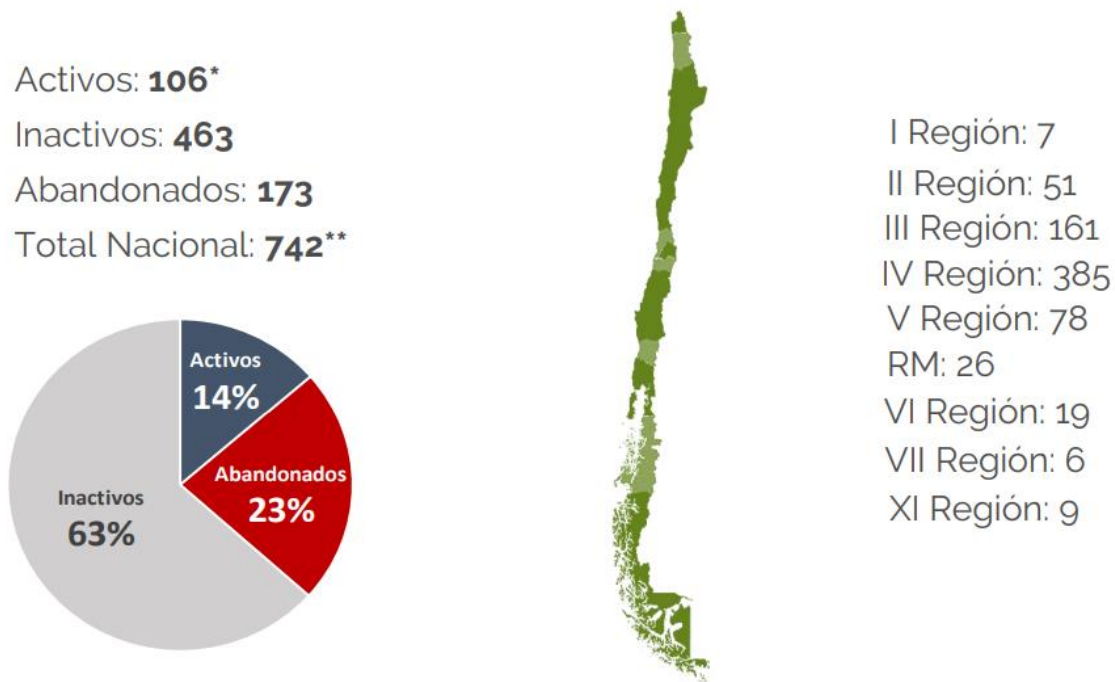


Figure 3: Tailings in Chile. Adapted from "National Tailings Deposit Plan for Sustainable Mining", by Ministry of Mining, 2020, p. 4 (<https://cambioclico.mma.gob.cl/wp-content/uploads/2020/Instruments-long-term-of-sector-13.pdf>). Copyright 2020 for Ministry of Mining

The country in the world with the largest mineral resources of the rare earth type is China, and it is relevant to indicate that these minerals are classified into light rare earth (LREE) and heavy rare earth (HREE), differing by their atomic numbers and electronic configurations. It is important to note that the search for rare earth deposits begins with geological prospecting and a set of subsequent unit operations. Figure 4 shows the rare earths classified in LREE and HREE.

1												18																																																									
1 H 1.0079												2 He 4.0026																																																									
3 Li 6.941		4 Be 9.0092												5 B 10.811		6 C 12.011		7 N 14.0064		8 O 15.9994		9 F 18.9984		10 Ne 20.1798																																													
11 Na 22.98976928		12 Mg 24.304		13 Al 26.9815386		14 Si 28.0855836		15 P 30.973761998		16 S 32.06		17 Cl 35.453		18 Ar 39.948		19 K 39.0983		20 Ca 40.078		21 Sc 44.9559122		22 Ti 47.867		23 V 50.9415		24 Cr 51.9961		25 Mn 54.938045		26 Fe 55.845		27 Co 58.933195		28 Ni 58.6934		29 Cu 63.546		30 Zn 65.38		31 Ga 69.723		32 Ge 72.64		33 As 74.9216		34 Se 78.96		35 Br 79.904		36 Kr 83.798																			
37 Rb 85.468		38 Sr 87.62		39 Y 88.90584		40 Zr 91.224		41 Nb 92.90638		42 Mo 95.94		43 Tc 98		44 Ru 101.07		45 Rh 102.9055		46 Pd 106.42		47 Ag 107.8682		48 Cd 112.411		49 In 114.818		50 Sn 118.710		51 Sb 121.757		52 Te 127.603		53 I 126.90547		54 Xe 131.29		55 Cs 132.90545196		56 Ba 137.327		57 La 138.90471		58 Ce 140.12		59 Pr 140.90765		60 Nd 144.242		61 Pm 144.9127		62 Sm 150.357		63 Eu 151.964		64 Gd 157.254		65 Tb 158.92532		66 Dy 162.50014		67 Ho 164.930329		68 Er 167.259		69 Tm 168.93274		70 Yb 173.054688		71 Lu 174.967	
87 Fr [223]		88 Ra [226]		89 Ac [227]		90 Th 232.0377		91 Pa 231.036889		92 U 238.02891		93 Np 237.048173		94 Pu 244.064224		95 Am 243.061381		96 Cm 247.070351		97 Bk 247.070351		98 Cf 251.083288		99 Es 252.083288		100 Fm 257.103712		101 Md 258.103712		102 No 259.103712		103 Lr 262.103712		104 Rf 261.103712		105 Db 262.103712		106 Sg 266.103712		107 Bh 264.103712		108 Hs 277.103712		109 Mt 268.103712		110 Ds 271.103712		111 Rg 272.103712		112 Cn 285.103712		113 Nh 284.103712		114 Fl 289.103712		115 Uut 288.103712		116 Uup 289.103712		117 Lv 293.103712		118 Uus 294.103712		119 Uuo 293.103712					

Figure 4: Periodic table indicating LREE and HREE. Adapted from "Current situation of the rare earth market and its potential in Chile" by D. Villela, F. Donoso and J. Cantallopts, 2016, p. 4 (<https://www.cochilco.cl/Listado%20Temtico/Tierras20Raras%20final.pdf>). All rights reserved for COCHILCO.

In the mining industry, several characterization techniques, such as analytical techniques, are employed to determine the composition and grade associated with rare earths.

In the mining industry, different techniques are used to analyze rare earths, such as the following: Mass spectrometry with inductively coupled plasma (ICP-MS), sensitive to almost all elements, transforms liquid samples into aerosol for evaluation. Inductively coupled plasma optical emission spectrometry (ICP-OES): analysis of atomic emission spectra of elements present in a sample; atomic absorption spectroscopy (AA): Based on the atomization of the analyte in a liquid matrix to evaluate the amount of analyte. - X-ray fluorescence (XRF): Uses secondary X-radiation emission to determine the concentration of elements in a sample. - Neutron activation analysis (NAA): It is based on the radiation released by radioactive nuclei formed by irradiating materials with neutrons.

It is direct to infer that rare earth extraction and processing is vital to modern technology. It is essential to optimize processes and mitigate environmental impacts. With deep understanding and advanced techniques, it is possible to work towards sustainable and economically viable solutions in Chile.

IV.- Development: Regarding Rare Earth Production and Processing

Rare earths are extracted from open mines, underground or sand. After extraction, they are crushed and ground to separate the ore (Mineral) from the surrounding rock. From there, the processing methods are defined to obtain the maximum production of ore in the shortest time possible, with sustainable care of the industry and locating the plant with the acceptance of nearby communities.

Figure 5 shows a diagram of the process of obtaining REE from Minerals; for this case study, emphasis is given on the stage of recovery of REE from minerals and recovery of REE from solutions.

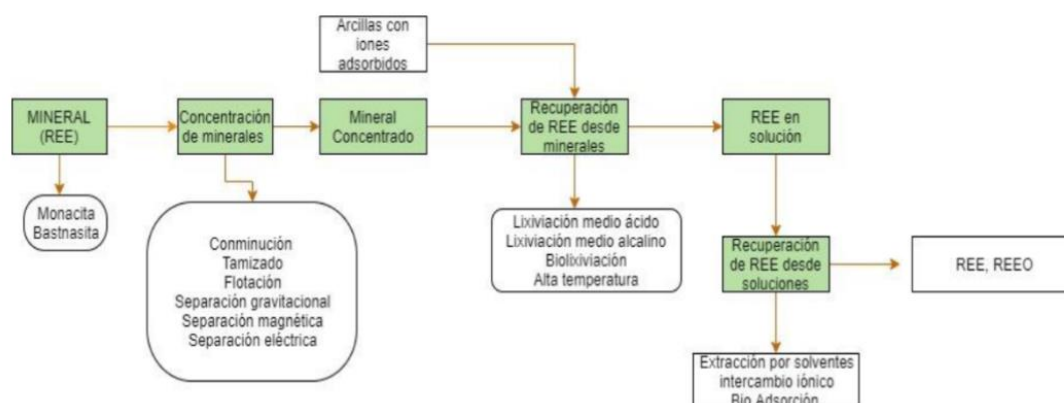


Figure 5: Process of obtaining REE from the Mineral. Herrera (2019)

In general, the industrial processes to recover rare earth, according to Herrera (2019), are usually the following:

a) **Chemical processing:** - Leaching: Dissolves rare earth minerals in aqueous solutions using acids or alkaline solutions. - Solvent extraction: Separate rare earth elements from aqueous solutions using an organic solvent. - Selective precipitation: Chemical reagents are used to form insoluble compounds with certain elements, creating precipitates. - Ion exchange: Uses ion exchange resins to purify rare earth elements in aqueous solutions.

b) **Refining and purification:** - Extraction by multiple solvents: Use several extraction cycles with organic solvents to purify the elements. - Electrochemical precipitation: Electric current is applied to form high-purity precipitates. - Ion exchange chromatography: Uses ion exchange resin columns to separate and purify the elements.

c) **Fusion and refining processes:** Melts and refines certain rare earths to obtain pure metals.

d) **Rare Earth Environmental Hazards:** Extraction and processing of rare earths can cause significant environmental damage. The use of acids in the processing stage can damage soil, water and ecosystems.

Bonifetti (2020) indicates that:

"The production of one ton of concentrate results in between 10,000 and 12,000 m³ of waste gas containing hydrofluoric acid, sulphur dioxide and sulphuric acid, about 75,000 liters of acid wastewater and about one ton of radioactive waste".

Some consequences of this pollution are listed below: - Soil and water pollution. - Loss of flora and fauna. - Alteration of natural habitat. - Destruction of forests. - Sedimentation of water. It is essential to consider the location and waste management measures in any rare earth project.

V.- Methods of separation and purification of rare earths: To extract and purify elements of the group of rare earths, it is essential to separate them from the minerals containing them and subsequently purify them. These elements, widely used in various industries, must meet high standards of purity. Some selective techniques used in these processes:

a) **Selective oxidation:** By selective oxidation, cerium, praseodymium, and terbium are oxidized from a state (+3) to (+4). Praseodymium and terbium, unstable in tetravalent aqueous solution, are easily precipitated using potassium chlorate as an oxidizing agent.

b) **Supercritical extraction:** By treating an aqueous oxide suspension with CO₂, various lanthanide carbonates are formed under specific conditions. These are precipitated and then treated with hydrochloric acid, allowing further treatment with solvents or ion exchange resins.

c) **Solvent extraction rare earths are classified as heavy, intermediate, and light.**

This classification facilitates the use of specific solvents for separation and purification. Below are some common extractive agents: Carboxylic acids Are effective, but their solubility varies depending on the pH. - Alkylphosphoric acids: DEHPA and EHEHPA, diluted in kerosene, are common examples. The extraction efficiency varies according to the element and temperature. - Hydroxioximes: Acid agents that form chelates. They are often used to treat rare earths, such as cerium and lanthanum. - Amines: Their effectiveness depends on the type of amine and the aqueous environment. - Corona and Calixarene Ethers: Their effectiveness is related to the pH of the aqueous medium and the type of rare earth. - Synergistic mixtures: Combinations of extractant agents that enhance the efficiency of extraction and the specificity of the separation operation.

VI. - Analysis of Technical and economic aspects:

The technical-economic analysis presents valuable data on rare earths.

With regard to this vital issue, in the mining industry, it is possible to note:

Rare earths at present.

a) **Production:** Rare earth is a crucial element in electronics, defense, renewable energy, automotive, medicine, and other fields. This has led to a significant increase in demand and, consequently, to the production of these elements, as shown in Figure 6.

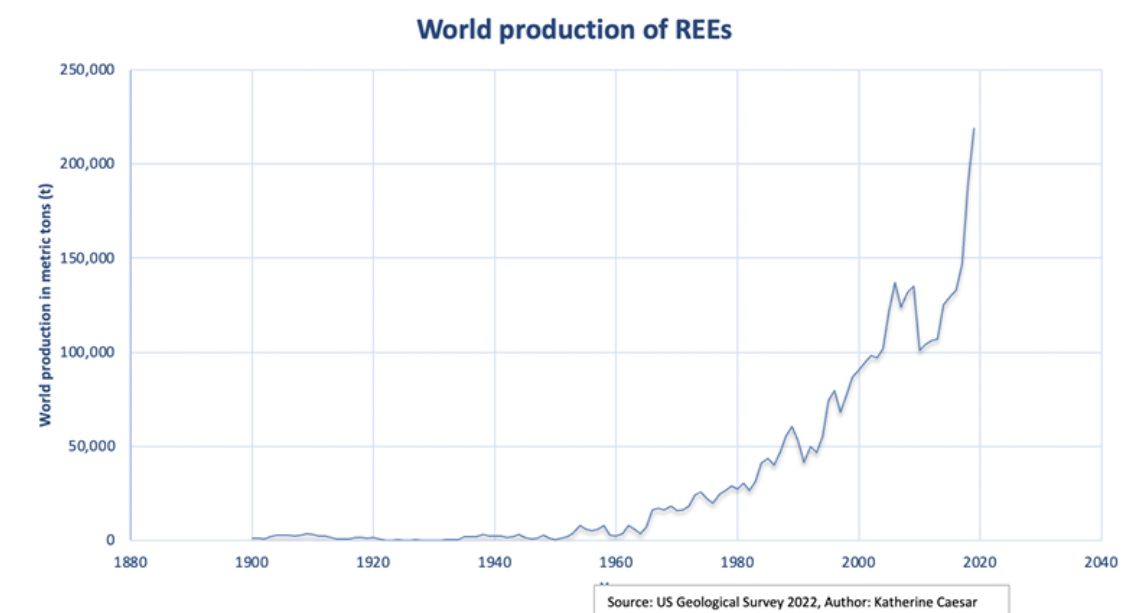


Figure 6: Global production of rare earth. Adaptado de “THE GEOPOLITICS, ECONOMICS, AND ENVIRONMENTAL IMPACTS OF RARE EARTH ELEMENTS AN OPPORTUNITY FOR CHILE’S MINING

SECTOR”, K. Caesar y C. Lindrud, 2023, Georgetown University, p. 49 (<https://athenablab.org/wp-content/uploads/2023/05/Caesar-Lindrud-Final-Capstone-2023.pdf>). Copyright 2023 for Center for Latin American Studies.

b) Rare Earth Processing: Regardless of the type of final product (oxides, fluorides, carbonates, phosphates or sulphates), the processing of rare earths follows general steps: 1. Mineral extraction. 2. Crushing and grinding. 3. Leaching with a specific acid. 4. Precipitation using suitable compounds. 5. Filtration and separation. 6. Washing and drying.

c) Product packaging: "packaging" in the context of materials or elements usually refers to the process of packaging, protection and presentation of products for storage, transport and sale. In the case of rare earths, which are a set of 17 chemical elements, including scandium, yttrium and 15 lanthanides, packaging is a critical aspect due to the unique properties and value of these elements.

VII. Protection against contamination: rare earths should be packaged in such a way that they are protected against contamination from other elements or compounds, as the presence of impurities may affect their applications.

Some rare earths are reactive and can degrade or react with air moisture. Therefore, their packaging may require controlled or sealed environments.

Depending on the application, rare earths can be packaged as pure metals, alloys, compounds, or solutions. For example, rare earths could be packaged in fine powder form for use in the manufacture of magnets. Because rare earths have specific applications and unique properties, packaging often includes detailed labels specifying composition, purity, provenance, and any other relevant information. Since some rare earth compounds can be toxic or present health risks, packaging must also comply with safety regulations, including warnings and recommendations for safe handling.

In the industry, proper packaging and rare earth management are essential not only to protect product integrity but also to ensure safety and efficiency in the supply chain and production.

VIII.-Costs: Rare earth is expensive to process. Considering two projects, Mount Weld, Australia, by Lynas Corporation Ltd. is a carbonate deposit with reported resources of 23.9 million tons with a law of 7.9% (Van Gosen, 2017). A feasibility study of the company determined that the initial investment was 680 million dollars (Casey, 2023). On the other hand, the project to be carried out in the town of Penco-Chile consists of an ionic clay deposit with measured and indicated resources of 20.7 million tons with a combined law of rare earth oxide (REO) of 2426 parts per million (ppm) (Mccopa, 2022). The initial investment of this project is 130 million dollars (Aclara, 2023). A comparison of the two projects is shown in Figure 7.

	Módulo Penco	Mount Weld
Tipo de Yacimiento	Arcillas ionicas	Carbonatitas
Inversión inicial	130 MDD	680 MDD
Recursos (t)	20.700.000	23.900.000
Ley	2426 ppm	7,9%
REO (t)	50.218	1.888.100

Table 7: Comparison of projects Modulo Penco and Mount Weld (Elaboration based on (Mccopa, 2022), (Casey, 2023) and (Aclara, 2023)).

There is an investment difference of 550 million dollars due to different plant sizes and the complexity of operating processes. In the case of Modulo, Penco should not be invested in crushing and grinding stages because ionic clays do not require it, which lowers costs. In addition, the Aclara carried out an innovation in its processes that consists of the recirculation of 95% of the water. Figure 8 shows how rare earths are intended to be produced in Penco.

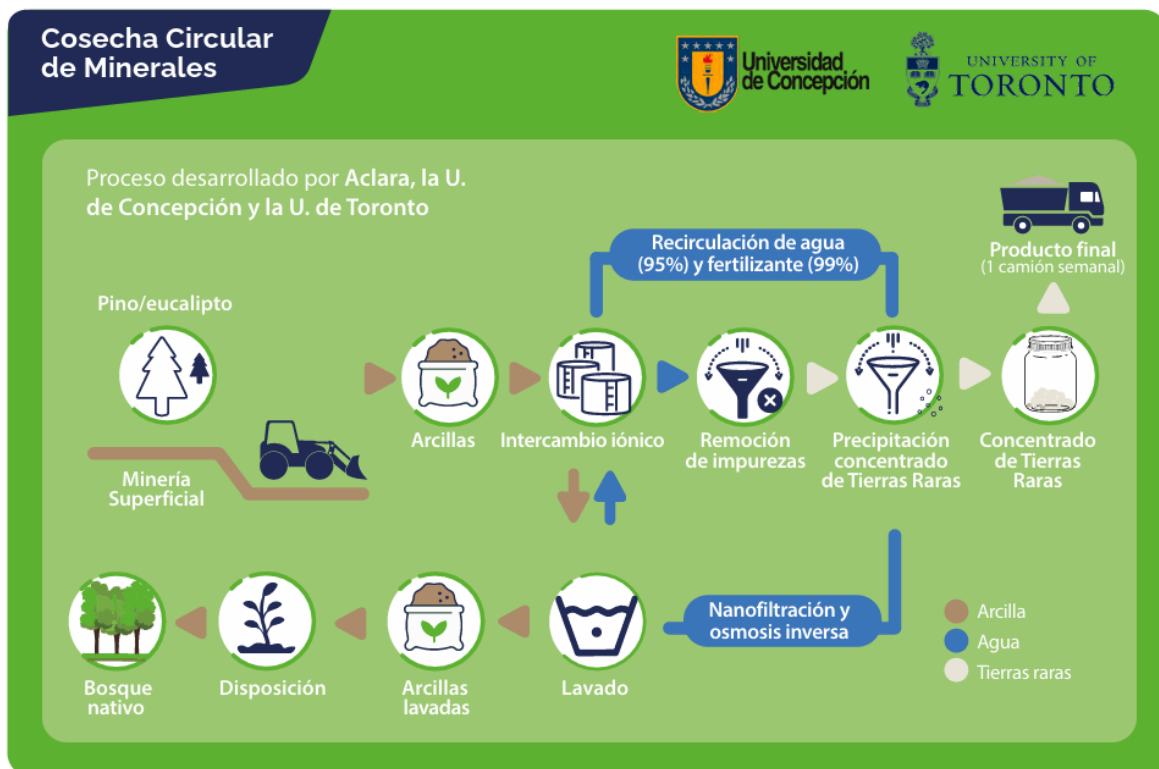


Figure 8: Production process of Modulo Penco. Adapted from "Aclara presents its new Rare Earths project in Biobío" by Aclara, 2023, Aclara, p. 19 (<https://somoaclara.cl/wp-content/uploads/05/revista-aclara-mayo-2023-1.pdf>). Copyright 2023 for Aclara.

With reference to the demand: According to Torres (2022), global demand is increasing by 8-12% per year and is expected to double from 300,000 tons in 2020 to 600,000 tons by 2030.

Figure 9 shows the demand for rare earth oxides and how China can meet much of the world's demand.

Rare Earth Oxide Group	Demand: tonnes REO		Production: tonnes REO	
	Global	Rest of the World excl. China	Global	Rest of the World excl. China
Lanthanum & Cerium	95,000t	40,000t	122,500t	52,500t
Selected Magnet Rare Earths (Pr, Nd, Tb, Dy)	45,00t	9,000t	36,000t (excludes recycled swarf)	12,500t
Selected Phosphor & Ceramic Rare Earths (Eu, Tb, Er & Y)	10,500t	3,000T	8,000	1,000t

Figure 9: HREE and LREE supply balance forecast for 2020. Adaptado de STRENGTHENING THE EUROPEAN RARE EARTHS SUPPLY-CHAIN Challenges and policy options A REPORT BY THE EUROPEAN RARE EARTHS COMPETENCY NETWORK (ERECON) (p. 69), by S. Ahonen, N. Arvanitidis, A. Auer, E. Baillet, N. Bellato, K. Binnemans, G. A. Blengini, D. Bonato, E. Brouwer, S. Brower, et al., 2015, European Commission (https://reinhardbuetikofer.eu/wp-content/uploads/2015/03/ERECON_Report_v05.pdf). Rights Reserved 2015 for European Commission.

Additionally, and with reference to the abundance, it is common to think that, when called rare earths, these elements are in very low concentrations in the earth. However, Figure 10 shows how it is possible to find them in concentrations even greater than silver and bronze in some cases.

<i>Elemento</i>	Concentración /ppm	Clasificación
<i>Cobre</i>	68	
<i>Cerio</i>	60	LREE
<i>Lantano</i>	30	LREE
<i>Neodimio</i>	27	LREE
<i>Itrio</i>	24	HREE
<i>Escandio</i>	16	LREE
<i>Plomo</i>	10	
<i>Praseodimio</i>	7	LREE
<i>Samario</i>	5	LREE
<i>Gadolinio</i>	4	HREE
<i>Disprosio</i>	4	HREE
<i>Uranio</i>	2,5	Radiactivo
<i>Erbio, Iterbio, Europio, Holmio, Terbio, Lutecio</i>	0,5-2	
<i>Plata</i>	0,1	
<i>Oro</i>	0,003	

Figure 10: Abundance of rare earths and base metals in the earth's crust. Adapted from the technical feasibility assessment of a rare earth extraction plant in Chile (p. 3), by P. J. Avendaño, 2017, Universidad de Chile (<https://repositorio.universidad de Chile. cl/handle/2250/150686>). All rights reserved 2017 for Universidad de Chile.

Also, with reference to the reserves, it is known that the largest reserves of rare earths in the world are held by China; on the other hand, there are countries like Brazil and Vietnam with abundant reserves, as seen in Figure 11. However, the exploitation of these differs greatly due to the complexity, cost and environmental problems caused by production processes.

Reservas	Nación	2019 (%)	2015	2010	2005	2000	1995
44000000	China	132.000 (61,97)	105.000	130.000	98.000	70.000	30.000
14000000	USA	26.000 (12,20)	4.100			5.000	28.700
¿?	Birmania	22.000 (10,32)					
3300000	Australia	21.000 (9,85)	10.000				3.000
6900000	India	3.000 (1,41)	1.700	2.700	2.700	2.700	2.500
12000000	Rusia	2.700 (1,27)	2.500			2.000	6.000
¿?	Madagascar	2.000 (0,94)					
1100	Tailandia	1.800 (0,84)	760		2.200		150
22000000	Brasil	1.000 (0,47)	880	550		1.400	400
22000000	Vietnam	900 (0,42)	200				
50000	Burundi	600 (0,28)					
124251100	TOTAL	213.000 (99,97)	125.140	133.250	102.900	81.100	70.750

Figure 11: Global rare earth reserves. Adapted from “Energy and Geostrategy 2021”, by C. Aranzadi, V. Bas, F. Sánchez, D. Robinson, M. Lasheras, T. Van de Graaf, I. Fuente y R. Prego, 2021, Spanish Institute of Strategic Studies, p. 352 (https://www.ieee.es/Galerias/fichero/cuadernos/Energia_y_Geoestrategia_2021.pdf). Rights Reserved 2021 for Ministry of Defense.

Some important facts to be mentioned are as follows:

Environmental Pollution: China has generated environmental damage in rare earth mining estimated at US\$5.5 trillion, eclipsing its total revenue of US\$4.8 trillion (Avendaño, 2017). Despite these costs, Mining continues because environmental damage is not addressed.

Rare Earth Tailings: Lopez (2022) reports that Chile has 700 mining tailings, some of them passive, knowing the existence of lands without having quantified their composition as a resource and reserve.

These deposits of ionic clays (tailings) allow a more efficient extraction without the use of explosives for processing or crushing and grinding for the release of the Mineral.

IX- Conclusions

Rare earths are essential in various industries, from electronics to defense. With China controlling 70% of the supply, there is a growing need to diversify sources. Chile could be a viable alternative. Environmental proposals include water recirculation and acid management to prevent pollution. In addition, Chile has tailings rich in rare earths that can be exploited, avoiding additional mining and reducing costs. Collaboration between government and private companies is crucial for rare earth production to be viable in Chile. Partnerships with academic institutions and research for cleaner and cheaper techniques are essential. It is equally important to socialize these projects with the community, basing the information on empirical evidence to obtain positive responses. In conclusion, a comprehensive approach is required for mining projects that consider factors such as sustainability, environmental impact, profitability, public reporting, and internal and external audits.

References

Montero, E. (2014). *THE RARE EARTH CRISIS*. http://www.conama.org/conama/download/files/conama2014/STs%202014/1996968957_ppt_EMontero.pdf

Martínez, J. I. y del Valle, A. V. (2014). *Rare earth: a strategic sector for China's technological development*. CECHIMEX Workbooks. (6). 4-5. <https://dusselpeters.com/CECHIMEX/Cuadersof Cechimex20146.pdf>

Ministry of Mining. (2020). *National Tailings Deposit Plan for Sustainable Mining* [PowerPoint Slide]. <https://cambioclimatico.mma.gob.cl/wp-content/uploads/2020/07/Instrumentos-de-largo-plazo-del-sector-13.pdf>

Villela, D., Donoso, F. and Cantallopts, J. (2016). *Current situation of the rare earth market and its potential in Chile*. <https://www.cochilco.cl/Listado%20Temtico/Tierras%20Raras%20final.pdf>

Bonifetti, C. (2020). *The socio-environmental damage caused by rare earth mining*. The citizens' window. Retrieved 5 June 2023, de <https://laventanaciudadana.cl/los-danos-socio-ambientales-provocados-por-la-mineria-de-tierras-raras/>

Caesar, K. y Lindrud, C. (2023). *THE GEOPOLITICS, ECONOMICS, AND ENVIRONMENTAL IMPACTS OF RARE EARTH ELEMENTS AN OPPORTUNITY FOR CHILE'S MINING SECTOR*. Georgetown University. <https://athenablab.org/wp-content/uploads/2023/05/Caesar-Lindrud-Final-Capstone-2023.pdf>

Van Gosen, B. S., Verplanck, P. L., Seal II, R. R., Long, K. R. and Gambogi, J. (2017). *Critical mineral resources of the United States—Economic and Environmental Geology and prospects for future supply*. En K. J. Schulz, J. H. DeYoung, Jr., R. R. Seal II, y D. C. Bradley (Eds.), *Rare-Earth Elements* (p. 06). US Geological Survey Professional Paper 1802. <https://pubs.usgs.gov/pp/1802/o/pp1802o.pdf>

Casey, J. P. (2023). *"The vision comes true": the story of Lynas' Mount Weld mine*. Retrieved July 20 2023, from <https://www.mining-technology.com/features/vision-becoming-reality-the-history-of-lynass-mount-weld-mine/>

Mccopa. (2022). *Aclara Resources withdraws the EIA application for its Penco Module project in Chile*. Retrieved July 20, 2023, from <https://www.mineria-pa.com/news/clarif-resources-withdrawal-request-de-eia-para-project-modulo-penen-chile/>

Clarifies. (2023). *Clarifies enters the SEIA with its new project, «Penco Module» which aims to produce the cleanest rare earths in the world*. Retrieved July 12, 2023, from https://somoaclara.cl/clarifying-in-six-year-old_new-project-modulo-penco-aspiration-to-produce-the-ground-weird-cleaning-the-world/

Clarifies. (2023). *Aclara presents its new Rare Earth project in Biobío*. <https://somoaclara.cl/wp-content/uploads/2023/05/revista-aclara-mayo-2023-1.pdf>

Torres, R. (2022). *Rare Earths in the Low Carbon Economy. An opportunity for Chile*. https://obtainingbcn.cl/obtainarchive?id=repository/10221/33629/1/Tierras_Raras_en_Economie_Baja_en_Carbono.pdf

Ahonen, S., Arvanitidis, N., Auer, A., Baillet, E., Bellato, N., Binnemans, K., Blengini, G. A., Bonato, D., Brouwer, E., Brower, S., et al. (2015). *STRENGTHENING THE EUROPEAN RARE EARTHS SUPPLY-CHAIN Challenges and policy options A REPORT BY THE EUROPEAN RARE EARTHS COMPETENCY NETWORK (ERECON)*. https://reinhardbuetikofer.eu/wpcontent/uploads/2015/03/ERECON_Report_v05.pdf

Avendaño, P. J. (2017). *Technical feasibility evaluation of a rare earth extraction plant in Chile*. [Report for the title of Civil Chemical Engineer, Universidad de Chile]. Institutional Repository. <https://repositorio.uchile.cl/handle/2250/150686>

Aranzadi, C., Baz, V., Sánchez, F., Robinson, D., Lasheras, M., Van de Graaf, T., Fuente, I., Prego, R. (2021). Rare earths, a key piece in the energy puzzle. En A. Padilla, J. Chakkour y A. Méndiz (Eds), *Energy and Geostrategy 2021* (p. 352). Ministry of Defence.
https://www.ieee.es/Galerias/fichero/cuadernos/Energia_y_Geoestrategia_2021.pdf

López, D., Sánchez, I. and Bórquez, A. (2022). *PUBLIC-PRIVATE PARTNERSHIPS FOR THE INDUSTRIALIZATION OF MINERAL RESOURCES*. <https://funpacifico.cl/wp-content/uploads/2022/12/Estudio-1.pdf>

Herrera, M. (2019). *Physico-chemical properties in La and Nd, and Economic-Technological Analysis of the Rare Earth Industry*. [Memory to apply for the Degree of Civil Engineer in Minas, Universidad San Sebastián].

The Buddhist Intertext in Lucian Blaga's Poems

Marinică Tiberiu Şchiopu⁶

Abstract: Lucian Blaga's indianism has been researched by Mircea Iu, but the Buddhist dimension of his poems was partially analysed. The present paper aims to explore some fundamental Buddhist concepts that the Romanian thinker and writer recycled in his works. It is well known that the Indian culture and philosophy influenced Blaga's *forma mentis* and his writings. The proposed analysis will focus on the connections between Buddhism and the Romanian poet due to the scarcity of information on this topic. The main research questions of this study are: "Which are the Buddhist ideas and theories that Lucian Blaga intertextually used in his poems?" and "Why did he choose those particular philosophical concepts?". In the analysis of the Buddhist dimension of Blaga's poetry, the following methods will be indispensable: close reading, hermeneutics, intertextuality and stylistics.

Keywords: Buddhism, intertextuality, Lucian Blaga, philosophy, poetry.

1. Intercultural Relations between Romania and India

Over centuries, the intercultural relations between Asia and Europe have evolved and intensified, and, in the meantime, they became more and more complex. Migrations, trade, wars or spiritual quests represented the main reasons for contacts between European and Asian peoples and cultures. This phenomenon generated acculturation and ethnic hybridization on both continents, and gave rise to a linguistic and ethnic family, namely the Indo-Europeans. Romanians and Indians are parts of this significant group of peoples and there have been indirect interactions between them since Middle Ages, relations which became direct in the XXth century. The first intercultural links between Indian and Romanians were mediated by Persians and Ottomans, and they consisted of loanwords, philosophical ideas and literary works which travelled from the Indian subcontinent to the Carpathians. For instance, the legend of the Buddha reached the Romanian territories in the Middle Ages as a hagiographic novel *Varlaam and Ioasaf*, after undergoing several transformations on its way through Persia, the Arab

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countries, Anatolia, and the Balkans. Another example of indirect intercultural connection is represented by the influence of *Pañcatantra* on *The Hieroglyphic History* by Dimitrie Cantemir, as Amita Bhose noticed:

“Either Cantemir’s idea of a disguised autobiography had a foreign source or it was an original one, the Oriental origin of the animal characters cannot be denied. Even though by that time, fables were written in Europe they represented a recycle of the Oriental stories. Furthermore, they did not have the amplitud of *The Hieroglyphic History*. Cantemir’s writing seems to be the first European novel in which all the events happen in the animal world, a feature that links this text to *Pañcatantra*”⁷ (Bhose 1998: 50).

Several Romanian writers and scholars have been interested in India and its culture: Mihai Eminescu, Constantin Brâncuși, Mircea Eliade, Lucian Blaga, Arion Roșu, Cicerone Poghir, Sergiu Al-George etc. Some of them had indirect contacts with India, others had the opportunity to visit the country of their dreams. Mircea Eliade was the most eloquent example in this case, a Romanian intellectual whose entire life was connected to Asia in general and with India in particular:

“Since very young age, Eliade had been fascinated of India, of its rich culture, of its philosophy and mysteries. India was an esential point of his life and many of his future accomplishments (literary and scientific) were rooted in the Indian period of his life, and the intense experiences he had there. India became a home for Eliade and it was, over years, a place of spiritual refuge and quest for absolute freedom” (Gligor 2016: 22).

Later, the contacts between Romania and India became official and more complex, and the two countries “established diplomatic relations on 14th December 1948. The first office of the Embassy of Romania to India dates from 1955” (Ghosh & Gligor eds. 2023: 19). There were some Indian intellectuals interested in Romania and its cultural herritage, and one of the most well-known was Amita Bhose, the Bengali scholar, writer and professor who researched Eminescu’s life and work.

Thus, one can infer that Romanians have always showed interest for the Indian civilization, and the intercultural connections between these two peoples permeated centuries, from Middle Ages to present.

⁷ If not mentioned otherwise, all the translations from Romanian belong to the author of this article.

The following two chapters of the study focus on the intertextual relations between Lucian Blaga's thought and work and the Indian philosophy and literature. The methodology of this research include the intertextual analysis, stylistics, close reading, and hermeneutics.

2. Lucian Blaga's Interest in India and Buddhism

Lucian Blaga (1895-1961) was one of the most important Romanian scholars: poet, novelist, playwright, essayist, translator and philosopher. He influenced the national culture of the last century through his outstanding works of literature and philosophy. The originality of his writings lies in the unique synthesis of ethnicity and universality. Blaga studied in Sibiu, Braşov and Vienna, and he worked for seven years in Bern and Lisbon as a diplomat, then he became a professor of philosophy of culture at the University of Cluj-Napoca. Lucian Blaga was an expressionist poet and he published several volumes of poems: *Poems of Light*, *The Prophet's Steps*, *In the Great Passage*, *Praise of Sleep* etc.

Lucian Blaga's interest in the Indian philosophical systems and literature can be inferred from his writings, the poet also noticed a complete and definitive assimilation of some ideas of Indian origin in the Romanian mentality and culture, this process cannot be traced back but it took place in favorable conditions: "through thorough assimilation motifs of Indian origin entered our own being, and they cannot be torn out without destroying vital tissues" (Blaga 1943: 8). Nicolae Manolescu noticed Lucian Blaga's propensity to combine esoteric Oriental ideas with his attraction towards nature (a feature of Blaga's poetry, as well as Eminescu's): "An obvious predilection towards Oriental esoteric ideas is engaged with an ever awaken sense of a kind of nature whose only secret is its primordial and destroying force as vigorous, as opaque" (Manolescu 2008: 680).

The ideas and topics of pre-Buddhist origin dominate Blaga's work, the themes and motifs from Upanishads and Vedanta outnumber those of Buddhist provenance. Though, Sergiu Al-Gorge and Mircea Itu identified a number of Buddhist influences in Lucian Blaga's philosophical and lyrical texts. In *Arhaic şi universal. India în conştiinţa românească*⁸, Sergiu Al-Gorge analysed the connections between philosophical views of the Romanian poet and several Indian schools of thought, among them Mādhyamaka, and deciphered similarities with philosophers like Śaṅkara or Nāgārjuna. In *Indianismul lui Blaga*⁹, Mircea Itu explored the

⁸ *Archaic and Universal: India in the Romanian Conscience.*

⁹ *Blaga's Indianism.*

essay and philosophical work of Blaga, as well as his fictional writings identifying several Indian motifs, themes and symbols that the Romanian writer recycled in a unique manner.

Thus, the Indian philosophy imbued Blaga's *forma mentis* and this influenced his work, as one could notice by reading his texts. Among the Indian schools of thought that Blaga admired was Buddhism, with its many branches.

3. The Buddhist Intertext in Lucian Blaga's Poetry

There could be intertextual connections between Buddhism and some of Lucian Blaga's poems, such as *Lumina* (The Light), *Liniște între lucruri bătrâne* (Silence among old things), *Eu nu strivesc corola de minuni a lumii* (I don't crush the aura of wonder of the world), *Din adânc* (From the depth), *Versuri nouă* (Verses for us), *Iubire* (Love), *Catrenele fetei frumoase* (The quatrains of the beautiful girl), *Vară de noiembrie* (November summer), *Catrenele dragostei* (The quatrains of love), *Cântecul vârstelor* (The song of the ages) etc.

In *I don't crush the aura of wonder of the world*, the poet used the motif of light as a metaphor for knowledge and wisdom like in the Buddhist texts: "The light of others/ Strangles that enchantment hidden/ In the depths of darkness/ But I, with my light,/ Feed the world's mystery" (Blaga 2018: 1). Light has the quality to bring out the being from its profane condition and to project in in the sacred domain, a world regarded as superior to the one in which the being lived prior to the experience of light. In the Indian spirituality, a person becomes what he/she knows and thinks, and this process depends on the presence of light; even Siddhartha Gautama attained Enlightenment at dawn according to the sacred texts, the attainment of Buddhahood coincided with the rise of light. The symbol of *nirvāṇa* is clear and pure light ever since. In the Gandhara art, the symbol of light was used in the depiction of different buddhas and bodhisattvas. Buddha himself is represented with a light aura or having light spikes behind his back. The shiny body of a buddha symbolizes the transcendence of all the conditioned states of existence. Moreover, during *samādhi*, the body of a buddha or a bodhisattva is shining. The symbolism of light is fundamental in Buddhism as it refers to knowledge, wisdom, reasoning, and Enlightenment that one can achieve after analysing the reality. The opposition between "light" (knowledge, wisdom) and "darkness" (ignorance – seen as the root of suffering) is metaphorically caught in the *Dhammapada*: "How is there laughter, how is there joy, as this world is always burning? Do you not seek a light, ye who are surrounded by darkness?" (Müller trans. 2013: 41). Fire represents the dissipation of ignorance through analysis and reasoning (the metaphor of the burning flames).

Cristina Călin noticed that for Blaga light is transcendence, and it is associated with the elements of nature and the succession of seasons, identifying even a *poetry of light*: “At Blaga, the poetry of the seasons is a poetry of light, of ‘the sky’, a space of the cosmic fire, an equivalent of ‘the diaphanous chaos’ of the virtual experiences” (Călin 2008: 106). The relation between nature and light is obvious, and the relation between *light* and *knowledge* is essential in Blaga’s work.

In *From your hair, māyā*, a philosophical concept borrowed by Buddhism from Hinduism, is defined by Blaga according to the Indian acceptance as a veil of illusion that covers the reality of the world: “The wisdom of a sage once told me/ about a veil, through which we cannot see,/ a spider net that everywhere hides the nature,/ so that anything that is real we cannot see” (Blaga 1968a: 11).

In Sanskrit, *māyā* means *illusion* and it represents one of the forty-six mental factor according to Sarvāstivāda – Vaibhāṣika School of thought, while Yogācāra includes it among the fifty-one mental factors, and clasifies it as a secondary affliction (*upakleśa*). *Māyā*, besides the ubiquitous illusion generated by the interdependent nature of reality, is the simulation of virtues and spiritual realizations, using deceiving words or subterfuges, or even using unethical means of livelihood according to dharma. In his poem entitled *The Eternal One*, Blaga uses this concept in relation to *Brahman*: “An impenetrable veil hides the Eternal One in darkness” (*ibidem*).

To become aware of *māyā* one should study the sacred texts and use the contemplative methods to analyse the true nature of reality, and there is a delimitation between a sage and a common/lay person, as Śāntideva stated in *Bodhicaryāvatāra*: “Ordinary people see and imagine things as real and not illusory. It is in this respect that there is disagreement between the contemplatives and the ordinary people” (Śāntideva 1997: 116).

In *Silence*, Blaga deals with the pan-Indian theory of the transmigration of souls, with a slight difference regarding the Buddhist perspective which does not accept an independent self and, in consequence, agrees with the transmigration of the mental continuum (*anātman* theory): “It is said that forbears, who died untimely,/ still having young blood in their veins,/ bearing intense passions in their blood,/ and living sun in their passions,/ come,/ come to resume living/ in us/ the un-lived life” (Blaga 1968a: 14). So, these lines describe eloquently the Indian theme of *saṃsāra*, or the cycle of deaths and rebirths.

In Blaga's works, *saṃsāra* is a recurrent theme. In *Love*, the Romanian poet emphasized the relation between desire and the endless cycle of existence: "You love when your senses awake/ The idea that in this world there is only the heart,/ That at the end of the road awaits/ Not death, but another story" (Blaga 1968b: 52). Love is in this case mere desire that causes a new "story", a new life, thus, love understood as physical desire is the fuel of *saṃsāra*. In this poem, death is regarded as a phase of an infinite process, not the end, a perspective shared by the majority of Indian philosophical systems. The same idea is stated in *Meanings*: "the meaning of death is not the mud" (*ibidem*: 140). The motif of "the story", as a metaphor of life, was used in *The Quatrains of the Beautiful Girl* as well: "Beauty from beauty you arised,/ suddenly embodied,/ As in *One Thousand and One Nights*/ a story is born from another story" (*ibidem*: 64).

The topic of the intermediate states between death and rebirth (*antarabhāva* in Sanskrit and *bardo* in Tibetan) is dealt with by Blaga in *Silence among Old Things*: "But I remember of the time when I was not,/ as of a distant childhood,/ and I regret that I didn't remain/ in the no name land" (Blaga 1968a: 100). This concept, *antarabhāva*, was conceived after the death of Buddha and it is accepted by some of the Buddhist schools of thought, while others reject it. In the Tibetan tradition, *bardo* is the main theme of *The Book of the Dead (Bardo Thödol)*. According to Tibetan Buddhism, in between death and rebirth, the mental continuum of a person is separated from the body and can experience various phenomena: the clearest visions of reality or the most terrible hallucinations caused by the negative actions that person committed during his/her life. For the masters and highly developed practitioners *bardo* is an amazing opportunity for liberation, as soon as the transcendental understanding can arise from the direct experience of reality; for the ones who have not trained their mind during their previous lives, *bardo* can be dangerous due to the karmic generated hallucinations, and they reincarnate in a lower realm. There is a plethora of information on *antarabhāva* in Vasubandhu's *Abhidharmakośa* and in Harivarman's *Satyasiddhi Śāstra*.

A metaphora of the stages between death and rebirth is used in *Goodness in Autumn*: "And we, once so evil,/ Are good today as if we'd pass lifelessly/ Through underground dawns" (*ibidem*: 105). The "underground dawns" could represent the *bardo* stages that purify the mental continuum, thus the metanoia presented here makes sense.

The theme of impermanence is a recurring one in Blaga's poems. In *The Song of the Ages*, the lyrical ego makes an allusion to the transitory and illusory character of life, world and

emotions: “My good love experiences/ how they were ground by Earth!/ How they perished under the grass/ the beauty and the word!/ My bad love experiences,/ how many fell too!/ My good, my bad love experiences,/ what abode from them under the ground?/ Only dust and rings” (Blaga 1968b: 97). Here, love is a synecdoche of the being, the caducity of feelings and people is due to their interdependent and conditioned causality, this is the reason of their empty nature. Impermanence (*anitya* in Sanskrit) is one of the three characteristics of existence along with suffering (*dukkha*) and selflessness (*anātman*), and impermanence implies that everything changes (things and beings), decay and disintegrate because of their compound structure.

Blaga’s verses are echos of *Dhammapada*: “Look at this dressed-up lump, covered with wounds, joined together, sickly, full of many schemes, but which has no strenght, no hold! / This body is wasted, full of sickness and frail; this heap of corruption breaks to pieces, life indeed ends in death” (Müller 2013: 41), or of Śāntideva’s *Boddhicharyāvatāra*: “Happiness and other feelings may be due to things such as a cloth, but in their absence, there would be no happiness and so on. The permanence of happiness and other feelings is never ascertained” (Śāntideva 1997: 130-131).

The Buddhist concept *anātman* can be identified in *Oh, Soul, full of sorrows*, a poem in which by using antinomy, the soul is described as empty due to its interdependent nature: “Oh, Soul, full of sorrows/ you are nothing and you are all” (Blaga 1968b: 148). This concept is defining for the Buddhist philosophy and detailed explanations regarding this topic can be found in several texts of the Pali Canon: *Samyutta Nikaya*, *Anguttara Nikaya*, *Patisambhidamagga* or *Vinaya*. Although Mircea Itu considered that between this poem and *Chandogya Upanishad* is an intertextual link: “But the theme is highlighted and emphasized in the *Upanishads*” (Itu 1996: 258), I think that Blaga approached this topic from the Buddhist perspective of emptiness (*śūnya*), understood as interdependence. In Buddhism, the self is empty but it exists, being conventionally designated on the basis of mind and body. The classical comparison of the self with a chariot (designated as an ensemble of components) shows that the self is a mere structure made of several aggregates, and it cannot be identified with any of its constituents. This is the reason that the self (or soul, in Blaga’s words) is defined by the paradox: everything/all and nothing.

In *Eve’s shadow*, despite the Christian allusion in the title, the author uses several allusions to some fundamental Buddhist concepts: “Out of the sweet ordeal,/ of the bitter pleasure/ that balances us between death/ and ressurection” (Blaga 1968b: 159). Blaga alludes

to some basic Buddhist concepts in this text: suffering (*dukkha* - “ordeal”), pleasure (*kama* - “pleasure”), and again the cycle of birth and rebirth (*saṃsāra* - “between death and resurrection”). The attachment towards the first two is caught by the epithets “sweet” and “bitter”, placed in contrast, like the nouns that they determine, and illustrate the amalgamated character of the conventional reality.

In *The years of life*, Lucian Blaga depicted *in nuce* the Buddhist perspective on life and becoming: “‘This is your path, my parents told me,/ you start from valleys to reach the praise of mind.’/ I took the path to the dark world./ I was walking, seeing, but I was not able to set./ I was walking, seeing, but I was not yet./ Through the long year, ah the long year, of the past times,/ only love founded myself” (*ibidem*: 209). The metaphor of ascension, in the second line, is an allusion to the transcendence of the conventional reality by cultivating wisdom, as the Buddhist sutras advise.

The motif of the path is found in Buddhism as well, a metaphor of the *dharma* or the Path to Enlightenment. The Romanian poet recycled not only ideas and images specific to the Buddhist philosophy but particular terms too. “Black” is used as an epithet of the world emphasizes the mundane, compound and illusory character of life, the universe, the conventional reality, and of the space in which the lyrical ego roams (“I was walking”, “I was seeing”) without achieving any kind of realisation. The lyrical ego can transcend the conventional reality only by cultivating love and kindness/goodness (*maitrī*), classified in Buddhism as one of the four immeasurable ones (*apramāṇa*) along with compassion (*karuṇā*), joy (*muditā*) and equanimity (*upekṣā*). Buddhaghosa advised in *Visuddhimagga* that loving kindness should start as a wish to achieve happiness for oneself and then it should be expanded towards all sentient beings. *Maitrī*, the wish for others to be happy, is considered an important factor which determines the *bodhisattvas* to work for the salvation of all beings.

Conclusions

Lucian Blaga's interest in Indian philosophy and Buddhism can be deciphered in many of his writings. He recycled in his poems several ideas and concepts pertaining to Siddhartha Gautama's philosophical system, thus, setting intertextual relations with the Buddhist thinking through allusion and reference. The manner in which Blaga inserted these borrowed themes and motifs in his works revealed solid knowledge of Buddhist philosophy. Moreover, all these foreign ideas do not interfere with the main structure of his texts, they enhance the complexity and subtlety of his poems. The philosophical dimension of Lucian Blaga's poetry is completed by the Buddhist borrowings, placing Blaga in the descent of Mihai Eminescu, from this perspective.

Sources

Blaga, Lucian. 1968a. *Poemele luminii*. București: Minerva.

Blaga, Lucian. 1968b. *Mirabila sămânță*. București: Minerva.

Blaga, Lucian. 2018. *Poems of Light*. Translated into English by Gabi Reigh. CreateSpace Independent Publishing Platform.

References

Bhose, Amita. 1998. *Maree indiană. Interferențe culturale indo-române*. Ediție îngrijită, cronologie și note bibliografice de Carmen Mușat-Coman. București: Mihai Dascăl Editor.

Blaga, Lucian. 1943. *Mahatma Gandhi, cum l-am cunoscut*. Saeculum.

Călin Cristina. 2008. *Metafora luminii în creația lui Lucian Blaga*. Brașov: Aula.

Gligor, Mihaela. 2016. *Orient și Occident. Topografii ale simbolului la Mircea Eliade*. Cluj-Napoca: Presa Universitară Clujeană.

Gligor, Mihaela & Ghosh, Lipi (eds). 2023. *Between Two Worlds: Romania and India. Essays on Expanding Borders through Culture*. Cluj-Napoca: Presa Universitară Clujeană.

Itu, Mircea. 1996. *Indianismul lui Blaga*. Brașov: Orientul Latin.

- Manolescu, Nicolae. 2008. *Istoria critică a literaturii române. 5 secole de literatură*. Pitești: Paralela '45.
- Müller, Max F. (translator). 2013. *The Dhammapada: A Collection of Verses. Being One of the Canonical Books of the Buddhists*. London and New York: Routledge.
- Śāntideva. 1997. *A Guide to the Bodhisattva Way of Life (Bodhicaryāvatāra)*. Translated from the Sanskrit and Tibetan by Vesna A. Wallace and B. Alan Wallace. Ithaca: Snow Lion Publications.

Conceptual Analysis of the Relationship Between Loneliness and Depression in Adolescent Years

Hakan EYGÜ¹⁰

Abstract

The relationship between loneliness and depression during adolescent years has garnered significant attention in psychological research. Due to the rapid changes in this period, individuals go through a difficult process. This period is characterized by increased vulnerability to feelings of loneliness and susceptibility to depressive symptoms. Loneliness, a subjective sense of social isolation, has been found to correlate positively with depressive symptoms in adolescents. The absence of meaningful social connections and the perception of being disconnected from peers can contribute to feelings of loneliness, which, in turn, can exacerbate the risk of developing or intensifying depression. The aim of this study was to investigate the relationship between loneliness and depression among individuals, with high school students comprising the sample, through a case study. An independent samples t-test analysis was conducted to determine whether students' levels of loneliness differed significantly based on age and gender. According to the analysis results, no statistically significant difference was found between gender and loneliness. However, a statistically significant difference was observed between age and loneliness. A correlation analysis was conducted to examine the relationship between students' levels of loneliness and depression. According to the analysis results, a significant positive correlation was found between loneliness and depression. It was determined that as the level of loneliness increased, the level of depression also increased.

Keywords: Depression, Loneliness, High school students, t-test, Turkey

JEL Code: D23, I12, I20

1. Introduction

The intricate relationship between loneliness and depression during the adolescent years has been a subject of paramount interest within the realm of psychological research. Adolescence, marked by its rapid physical, emotional, and cognitive changes, is a pivotal phase in an individual's life journey. This transitional period presents unique challenges, as young individuals navigate through the complexities of self-discovery and social interactions.

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During adolescence, a time when peer relationships and social dynamics take center stage, the vulnerability to feelings of loneliness becomes pronounced. This phase coincides with an increased susceptibility to depressive symptoms, which can significantly impact overall well-being. Loneliness, characterized by a subjective perception of social isolation, emerges as a crucial factor in the emotional landscape of adolescents. Studies have consistently indicated a positive correlation between the experience of loneliness and the manifestation of depressive symptoms among this demographic.

The absence of meaningful social connections and a perceived detachment from one's peers can contribute to a sense of loneliness. This emotional state, in turn, may catalyze the risk of developing or intensifying depressive tendencies. The synergy between loneliness and depression can create a feedback loop, where each condition exacerbates the other. As adolescents grapple with their evolving identities and societal expectations, their emotional equilibrium can be significantly disrupted by these negative psychological factors.

The purpose of the current study was to delve into the intricate interplay between loneliness and depression among individuals, focusing on high school students as the primary sample group. Employing a comprehensive case study approach, the research aimed to uncover the nuances of this relationship within the context of the unique challenges faced by adolescents. Furthermore, the study sought to ascertain whether age and gender played significant roles in shaping individuals' experiences of loneliness. To achieve this, the research utilized an independent samples t-test analysis to explore potential differences in loneliness levels based on age and gender. The findings revealed that while there was no statistically significant difference between gender and loneliness, a notable disparity emerged with regards to age. This suggests that age might influence the perception and experience of loneliness among adolescents.

Additionally, a correlation analysis was conducted to illuminate the connection between students' levels of loneliness and depression. The results uncovered a substantial positive correlation between these two variables. This discovery reinforces the notion that heightened feelings of loneliness can be indicative of an increased risk for depression. In essence, this introductory exploration sheds light on the critical importance of understanding the complex relationship between loneliness and depression during adolescence. By comprehending the intricate dynamics at play, researchers, educators, and mental health professionals can design targeted interventions that address the emotional well-being of adolescents, thus fostering a healthier transition into adulthood. The aim of this study was to uncover the level of relationship

between depression levels and loneliness scores among individuals aged 14 to 18 in the adolescent period, and to provide recommendations in light of these findings

2. Literature

Individuals go through many developmental stages throughout their lives. Depression, characterized by symptoms such as low motivation, changes in appetite or sleep patterns, diminished self-worth, feelings of guilt, decreased energy, dissatisfaction, and loss of interest, is a global mood disorder affecting societies worldwide (Erzen & Çikrikci, 2018). Research estimates suggest that around 350 million individuals are impacted by depression. Findings from the World Mental Health Survey indicated that nearly 1 in 20 individuals experiences episodes of depression (WHO, 2012). The occurrence of insecurity, pessimism, and depression in emotions and slowing down in thoughts and movements are defined as depression. In this context, depression is one of the important mental problems seen in adolescents in this period. According to Lewinson et al. (1998), although the lifetime prevalence of depression is less than 3% in childhood, this rate reaches 14% in adolescence. In this case, it can negatively affect the development of adolescent individuals. Especially a significant portion of individuals experiencing depression during childhood and adolescence continue to face various psychological issues, including depression, in their adult lives (Harrington et al., 1999; Rao et al., 1993). It has been determined that these individuals often experience recurring problems, and their risks for substance use, suicide, relationship difficulties, and academic failure increase (Vostanis & Harrington, 1994; Barrett et al., 1991; Kováč et al., 1993; Holland et al., 2017).

Research conducted among adults (Eaton et al., 1997, Keller and Shapiro, 1981, Kessler et al., 1993) as well as adolescents (Hankin et al., 1998, Kovacs, 2001) has indicated a higher incidence of initial depression occurrences in females compared to males. In another study, a preliminary investigation conducted by Amenson and Lewinsohn (1981) demonstrated that women with a history of depression exhibited a higher likelihood of experiencing subsequent depressive episodes when compared to men; no gender disparities were observed for the emergence of new depressive incidents among those without a prior history of depression. In research involving older adults, Lewinsohn et al. (1989) identified an elevated probability of depression recurrence among females.

If loneliness is emotional, it is a universal and widespread condition with cognitive and motivational dimensions (Galanaki, 2004). Loneliness is a negative state that arises due to its contradiction with human nature, which inherently seeks social interaction and a sense of belonging (Cacioppo & Patrick, 2008). Research on loneliness has highlighted its association

with factors such as a lack of emotional support (Stickley et al., 2015), ensnarement (Perron et al., 2014), stress (Bhatt et al., 2020), social deficits (Zhang et al., 2014), low self-esteem (Świtaj et al., 2015), shyness (Clark et al., 2015), despondency (Chang et al., 2015), and diminished levels of emotional intelligence (Wols et al., 2015; Erzen & Çikrikci, 2018).

3. Method

3.1. Model and dataset

This study is quantitative research that examines the relationship between depression scores and loneliness scores of high school students. It is conducted within the framework of a non-experimental design model, specifically the correlational survey model. The population of this study consists of individuals aged 14 to 18 in the adolescent period. The research sample comprises 70 randomly selected high school students. In the study, the Kutcher Adolescent Depression Scale (KADS-11) (Çelik & Atabay, 2022) was utilized to assess the depression levels of adolescents, and the UCLA Loneliness Scale (Russell et al., 1978) was employed to measure their levels of loneliness. In this context, research hypotheses have been formulated as follows.

H₁: There is no statistically significant difference between gender and depression.

H₂: There is no statistically significant difference between age and depression.

H₃: There is no statistically significant difference between gender and loneliness.

H₄: There is no statistically significant difference between age and loneliness.

3.2. Findings

In the study, an independent samples t-test was conducted to determine whether there was a significant difference in depression and loneliness levels between students based on gender. Additionally, a correlation analysis was performed to ascertain whether there was a relationship between depression levels and loneliness levels.

The demographic characteristics of the participating high school students are presented in Table 1.

Table 1. Students' Demographic Characteristics

Variable		n	%
Gender	Women	24	34,3
	Male	46	65,7
Age	14	21	30,0
	15	13	18,6
	16	12	17,1
	17	11	15,7
	18	13	18,6

Of the participants in the study, 34.3% were female and 65.7% were male. Among the participants, 30% were 14 years old, 18.6% were 15 years old, 17.1% were 16 years old, 15.7% were 17 years old, and 18.6% were 18 years old.

The analysis results regarding depression levels based on gender of the students are presented in Table 2.

Table 2. Test Results for Depression Levels by Gender

Variable	Cinsiyet	n	$\bar{X}$	s.d	t	p
Depression	Women	24	23,333	5,231	1,609	0,112
	Male	46	21,130	5,540		

According to the results of the *t*-test analysis conducted to determine whether there was a significant difference in depression levels based on students' gender, it was determined that the difference was not statistically significant ($p > 0,05$).

The analysis results regarding depression levels based on the age variable of the students are provided in Table 3.

Table 3. Test Results for Depression Levels by Age Groups

Variable	Yaş	n	$\bar{X}$	s.d	F	p
Depression	age 14	21	21,571	5,399	2,313	0,067
	age 15	13	23,846	5,551		
	age 16	12	23,666	5,565		
	age 17	11	22,454	5,317		
	age 18	13	18,307	4,571		

According to the results of the ANOVA test conducted to determine whether there was a significant relationship between students' ages and depression levels, it was found that there was no statistically significant differentiation ($p > 0,05$) between students' ages and depression levels.

The analysis results regarding loneliness levels based on the age variable of the students are provided in Table 4.

Table 4. Test Results for Loneliness Levels by Gender

Variable	Cinsiyet	n	$\bar{X}$	s.d	t	p
Loneliness	Women	24	48,750	17,446	1,477	0,144
	Male	46	42,869	14,899		

According to the results of the t-test analysis conducted to determine whether there was a significant relationship between students' gender and loneliness levels, it was determined that the difference was not statistically significant ($p > 0,05$).

The analysis results regarding loneliness levels based on the age variable of the students are provided in Table 5.

Table 5. Test Results for Loneliness Levels by Age Groups

Variable	Yaş	n	$\bar{X}$	s.d	F	p
Loneliness	age 14	21	45,095	13,703	3,141	0,020
	age 15	13	52,153	15,763		
	age 16	12	50,666	16,058		
	age 17	11	43,181	16,023		
	age 18	13	33,384	14,586		

According to the results of the ANOVA test conducted to determine whether there was a significant relationship between students' ages and depression levels, it was found that there was statistically significant differentiation ($p < 0,05$) between students' ages and loneliness levels. To determine between which means the difference lies, a Tukey's post hoc test was conducted, revealing a statistically significant difference in loneliness levels between adolescents aged 18 and those aged 15 or 16. Specifically, adolescents aged 18 exhibited a significant difference in loneliness levels compared to individuals aged 15 or 16.

In the final stage of the study, utilizing the data obtained from the students, an investigation was carried out to explore whether there existed a significant relationship between the depression variable and loneliness, employing correlation analysis. The analysis results indicated a significant relationship ($r = 0,893$; $p < 0,05$) between the variables.

Conclusion

The research findings of this study, which examined the relationship between loneliness levels and depression levels among high school students aged 14 to 18, revealed that there was no statistically significant difference between the genders and depression levels of adolescent individuals. This result exhibits similarity to similar studies in the literature (Can, 2020; Ören

& Gençdoğan, 2007). No significant relationship was found between both the depression variable and the loneliness variable with gender. However, a significant relationship was found between students' age group and loneliness. This age range falls within the adolescent period, during which adolescents transition from dependence to independence, autonomy, and maturity. Rather than being dependent on the family, they strive to stand on their own (Mabey & Sorensen, 1995). During this period, students may experience emotional or social forms of loneliness. During this period, in order to alleviate feelings of depression and loneliness, students can be guided towards creating new hobby areas aligned with their skills, where they can spend their time. In schools, students with high levels of depression and loneliness can be identified using various assessment tools, and these individuals can be provided with more psychological counseling services. During this period, efforts can be made to promote positive self-perception, enhance self-confidence, and improve social relationships among individuals.

References

- Amenson, C. S., & Lewinsohn, P. M. (1981). "An investigation into the observed sex difference in prevalence of unipolar depression". *Journal of Abnormal Psychology*, 90(1), 1.
- Çelik, Balcı, S. & Atabay, Uysal, E. (2022). "Kutcher ergen depresyonu ölçeği (KEDÖ-11) Türkçe uyarlaması: Geçerlik ve güvenirlik çalışması". *Social Sciences Studies Journal (SSSJJournal)*, 5(30), 607-616.
- Barrett, M. L., Berney, T. P., Bhate, S., Famuyiwa, O. O., Fundudis, T., Kolvin, I., & Tyrer, S. (1991). "Diagnosing childhood depression. Who should be interviewed-parent or child?: The Newcastle child depression project". *The British Journal of Psychiatry*, 159(S11), 22-27.
- Bhatt, S., Nagappa, A. N., & Patil, C. R. (2020). "Role of oxidative stress in depression". *Drug Discovery Today*, 25(7), 1270-1276.
- Cacioppo J. T., Patrick W. (2008). *Loneliness: Human nature and the need for social connection*. New York: W.W. Norton & Company.
- Can, S. Y. (2020). *Adölesanlarda sosyal medya kullanımının depresyon ve yalnızlığa etkisi* (Master's thesis, İnönü Üniversitesi Sağlık Bilimleri Enstitüsü).
- Chang E. C., Lian X., Yu T., Qu J., Zhang B., Jia W., ... Hirsch J. K. (2015). "Loneliness under assault: Understanding the impact of sexual assault on the relation between loneliness and suicidal risk in college students". *Personality and Individual Differences*, 72, 155–159.
- Clark D. M. T., Loxton N. J., Tobin S. J. (2015). Multiple mediators of reward and punishment sensitivity on loneliness. *Personality and Individual Differences*, 72, 101–106.
- Galanaki E. (2004). "Teachers and loneliness: The children's perspective". *School Psychology International*, 25, 92–105.
- Eaton, W. W., Anthony, J. C., Gallo, J., Cai, G., Tien, A., Romanoski, A., ... & Chen, L. S. (1997). "Natural history of Diagnostic Interview Schedule/DSM-IV major depression: The Baltimore epidemiologic catchment area follow-up". *Archives of General Psychiatry*, 54(11), 993-999.
- Erzen, E., & Çikrikci, Ö. (2018). "The effect of loneliness on depression: A meta-analysis". *International Journal of Social Psychiatry*, 64(5), 427-435.

- Hankin, B.L., Abramson, L.Y., Moffitt, T.E., McGee, R., Silva, P., Angell, K.E. (1998). "Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study". *Journal of Abnormal Psychology*, 107, 128-14.
- Harrington, R., Kerfoot, M., Dyer, E. et al (1998). "Randomized trial of a home based family intervention for children who have deliberately poisoned themselves". *Journal of the American Academy of Child and Adolescent Psychiatry*, 37, 512–518.
- Holland, K. M., Vivolo-Kantor, A. M., Logan, J. E., & Leemis, R. W. (2017). "Antecedents of suicide among youth aged 11–15: A multistate mixed methods analysis". *Journal of Youth and Adolescence*, 46, 1598-1610.
- Keller, M. B., & Shapiro, R. W. (1981). "Major depressive disorder: Initial results from a one-year prospective naturalistic follow-up study". *The Journal of nervous and mental disease*, 169(12), 761-768.
- Kováč, M., Nagymarosy, A., Soták, J., & Šutovská, K. (1993). "Late Tertiary paleogeographic evolution of the Western Carpathians". *Tectonophysics*, 226(1-4), 401-415.
- Kovacs, M. (2001). "Gender and the course of major depressive disorder through adolescence in clinically referred youngsters". *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(9), 1079-1085.
- Lewinsohn, P.M., Zeiss, A.M., Duncan, E.M. (1989). "Probability of relapse after recovery from an episode of depression". *Journal of Abnormal Psychology*, 98 (107-1), 16
- Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). "Major depressive disorder in older adolescents: prevalence, risk factors, and clinical implications". *Clinical Psychology Review*, 18(7), 765-794.
- Mabey J, Sorensen B. (1995). *Counselling For Young People*, 1 th ed. Buckingham, Open University Press, 7-10.
- Ören, N. & Gençdoğan, B. (2007). "Lise Öğrencilerinin Depresyon Düzeylerinin Bazı Değişkenlere Göre İncelenmesi". *Kastamonu Eğitim Dergisi*, 15(1), 83-92.
- Perron J. L., Cleverley K., Kidd S. A. (2014). Resilience, loneliness, and psychological distress among homeless youth. *Archives of Psychiatric Nursing*, 28, 226–229.
- Rao, U., Weissman, M. M., Martin, J. A., & Hammond, R. W. (1993). "Childhood depression and risk of suicide: a preliminary report of a longitudinal study". *Journal of the American Academy of Child & Adolescent Psychiatry*, 32(1), 21-27.
- Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). "Developing a measure of loneliness". *Journal of Personality Assessment*, 42(3), 290-294.
- Stickley A., Koyanagi A., Leinsalu M., Ferlander S., Sabawoon W., McKee M. (2015). "Loneliness and health in Eastern Europe: Findings from Moscow". *Russia. Public Health*, 129, 403–410.
- Świtaj P., Grygiel P., Anczewska M., Wciórka J. (2015). "Experiences of discrimination and the feelings of loneliness in people with psychotic disorders: The mediating effects of self-esteem and support seeking". *Comprehensive Psychiatry*, 59, 73–79.
- Vostanis, P. & Harrington, R. (1994). "Cognitive-behavioural treatment of depressive disorders in child psychiatric patients". *European Child and Adolescent Psychiatry*, 3, 111–123.
- Wols A., Scholte R. H. J., Qualter P. (2015). "Prospective associations between loneliness and emotional intelligence". *Journal of Adolescence*, 39, 40–48.
- World Health Organization. (2012). Depression. Retrieved from <http://www.who.int/mediacentre/factsheets/fs369/en>
- Zhang F., You Z., Fan C., Gao C., Cohen R., Hsueh Y., Zhou Z. (2014). "Friendship quality, social preference, proximity prestige, and self-perceived social competence: Interactive influences on children's loneliness". *Journal of School Psychology*, 52, 511–526.

Evaluating Distance Education Programs for Gifted Students

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Abstract

The aim of this study is to evaluate distance education programs for gifted students. Within the scope of this aim, three distance education programs for gifted students were evaluated. These programs were Johns Hopkins Center for Talented Youth, Davidson Institute for Talent Development, and the technology based Schoolwide Enrichment Model. There are numerous distance education programs for gifted students. In determining these three programs, the conditions that the program should be active, have a website, and be only for gifted students were taken into consideration. In this qualitative research data were collected by document review technique. The sources classified as document were the websites of the program and research on describing programs. To analyze data content analysis was used. Programs' theoretical basement, content, admission requirements and course evaluation were compared. Furthermore, research on the effectiveness of the programs were analyzed. Research findings show that all three programs were face-to-face programs that were later transferred to online platforms. One of them has a theoretical basement, all three programs have rich content and course evaluation system appropriate with the content. Admission requirements for all three programs are not clear, but participants have to pay a fee according to the course they take. There are limited studies on investigating the effectiveness of these programs. As a result, it can be said that the number of distance education programs for gifted students should be increased, more publicity should be done worldwide, and more research should be done on these programs.

Keywords: Distance education, gifted students, program evaluation

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INTRODUCTION

Technological developments have significantly affected all areas of social life. One of the fields affected by these developments is education. Today, there is an intense effort to integrate communication technologies into the field of education. Because communication technologies enable the effective use of resources allocated to education, provide flexibility to learning environments and increase the quality of learning. One of the applications formed by integrating information and communication technologies into education and training processes is distance education (Akyürek, 2020). Distance education, especially, gained prominence worldwide during the COVID-19 epidemic. However, the first example of distance education application was encountered in 1700s in the form of the use of postal letters in the education of priests (Garrison, 2000).

Distance education is defined as an educational method in which students and teachers in different environments carry out normal learning-teaching activities with a special lesson plan and special communication methods (İşman, 1998). In the subsequent years, as technology continued to advance, distance education evolved into "distance education through radio" and, with the widespread adoption of television, transformed into "distance education through television. Distance education, which first started with the system of sending letters, has taken the form of "distance education through radio" with the development of technology since 1920, and then "distance education through television" with the widespread use of television (Uşun, 2006). The use of computers in distance education began in 1959 with the interconnection of central computers in the United States and Europe via satellite channels. The use of the internet in distance education, on the other hand, became prominent towards the late 1980s (Yenal, 2009). In our technology-driven world today, there are numerous virtual learning environments available for students who wish to pursue distance education. Virtual education platforms, university distance education departments, individual online educators, and virtual libraries are among the various environments (Rovai, Ponton, & Baker, 2008). It is seen that the definitions of distance education, which allows students from different geographies to be together, are similar in general terms. According to Mantyla and Gividen (1997), distance education is education in which the teacher is not physically present with the learner. In the definition made by the California Distance Learning Project (CDLP, 2013), it is emphasized that distance education is an education system realized by establishing a connection between the student and educational resources. The American Education Association (1997) defined distance education

as a system and process that establishes a relationship between the learner and the resources available to the learner and listed the characteristics of distance education as follows:

- Teacher and learner are separated in terms of place and/or time context, between learners and/or between learners and resources.
- The interaction between the learner and the teacher, between learners themselves, and between the learner and the source can be carried out through one or more tools, but this tool does not have to be electronic.

Taking the definitions of distance education into account, it is seen that distance education has the function of bringing together students and teachers in different geographies through communication technologies. On the other hand, it is noticeable that distance education programs are widespread around the world, especially in universities. When we look at the number of students in these distance education universities, we see very large numbers. For example, the Open University in China has 2.7 million students, Indira Gandhi National Open University in India has 3 million students, Anadolu University in Turkey has 1.7 million students, North Africa University in Africa has 300 thousand students, and the Open University in Britain has 250 thousand students (Simpson, 2012).

Distance Education for Gifted Students

Catering to the unique educational needs of exceptionally gifted students remains an ongoing challenge for educators, parents, and society as a whole. Various options are accessible, both within and outside the school setting, such as special gifted and talented programs, acceleration, differentiation, and summer initiatives. With the widespread availability of the Internet and information technologies in homes, schools, libraries, and other student-accessible settings, another viable option for these students is distance education (Wallace, 2009). Gifted students have access to distance education programs, as mentioned in the literature. John Hopkins University offers education for both secondary and high school levels, while Stanford University provided a range of education from pre-school to 12th grade and undergraduate levels (Van Tassel-Baska, 2004). However, today's Stanford University does not offer a distance education program for gifted students. Research investigating the effectiveness of distance education programs for gifted students highlights that it creates opportunities for high achievers in academics, especially those from disadvantaged backgrounds (Adams & Cross, 1999) and younger students (Cope & Suppes, 2002). Olszewski-Kubilius and Lee (2004) argue that perceptions about distance education depend on the program's quality and teachers. For gifted students, the quality and quantity of education matter more than whether it's delivered online

or in person. Studies on distance education, which has been on the agenda for the last 50 years in both general education and gifted education, show that distance education has visible advantages a) in terms of course achievement, b) for students from disadvantaged groups, and c) for younger students. A holistic view of the educational field suggests that the combination of both traditional and web-based distance education is more preferable for gifted students.

Current Research

In this study distance education programs for gifted students are evaluated. In line with this purpose, the following research questions were sought to be answered.

- What is the theoretical basement of the distance education programs for gifted students?
- What are the content and course evaluation of the distance education programs for gifted students?
- What are the admission requirements of the distance education programs for gifted students?

METHOD

In this study three distance education programs were analyzed. To determine the distance education programs for gifted students, a systematic approach was employed. Firstly, online databases and google searches were conducted to identify distance education programs for gifted students. Keywords used in the secerning were gifted, talented, high able students, distance education, virtual programs and online programs. 60 distance education programs for gifted and talented reached. According to inclusion criteria, these programs were also eliminated. Inclusion criteria were as follows: The program should be active, have a website, and be for gifted students. As a result, three programs were determined. Programs' theoretical basement, content, admission requirements and course evaluation were compared. Three programs analyzed in this study were Center for Talented Youth (CTY) Virtual, Davidson Institute for Talent Development and Renzulli Learning.

Center for Talented Youth (CTY) Virtual

Johns Hopkins University Center for Talented Youth (CTY) initiated a groundbreaking distance education initiative for highly gifted students in 1984, starting with a writing course funded by the National Endowment for the Humanities. Since then, the program has expanded significantly, boasting over 6,000 enrollments annually and offering 45+ courses in diverse subjects like writing, mathematics, computer science, biology, chemistry, physics, and psychology. With participants hailing from 50+ countries, students engage in coursework from their homes or schools. Math classes are accessible to students as young as 5 years old, and

writing courses are open to those in Grade 5 and above. Teenagers can explore advanced options, including various advanced placement courses.

Admission to CTY's distance education is based on above-grade test performance (Brody & Mills, 2005). Students excelling in verbal skills can pursue writing, humanities, or social science courses, while those demonstrating aptitude in quantitative skills can enroll in math, computer science, or science classes. CTY's approach emphasizes nurturing each student's strengths. CTY's program isn't meant to replace a full curriculum but offers year-round opportunities for advancement, acceleration, and enrichment in a student's strongest areas while attending school. Some students, with support from their teachers and school administrators, use CTY distance courses to replace a regular school course, earning credit or placement. For instance, instead of attending a standard math class, a CTY student might work on a more advanced course in the computer lab. Other students supplement their regular school curriculum with distance courses, and many opt for summer enrollment. These courses have also become integral in the curriculum for homeschooled gifted children (Wallace, 2009).

Davidson Institute for Talent Development

Davidson Academy Online stands as a pioneering institution, being the premier fully online school tailored for exceptionally gifted middle and high school students (Shaughnessy, 2008). Originating from the Davidson Academy in Reno, Nevada, established in 2006 as the first public school catering specifically to profoundly gifted students, the institution broke ground by organizing classes based on ability rather than age. Subsequently, in 2017, the Academy expanded its reach by introducing Davidson Academy Online, an accredited virtual school accessible to profoundly gifted students residing anywhere in the U.S. and Canada. This online platform is designed for exceptionally talented individuals aged 9 and above, providing them with an intellectually stimulating curriculum and the opportunity to engage with peers of similar intellectual prowess. In 2022, Davidson Academy Online transitioned into an independent school, simplifying enrollment for families across North America. The institution is committed to fostering a nurturing environment that acknowledges the potential of profoundly gifted youth, empowering them to take charge of their education and personal growth. Davidson Academy Online is dedicated to a comprehensive educational approach, promoting collaboration, challenge, and support among students, educators, and families. Central to their mission is the goal of making gifted education accessible to all, exemplified by their flexible tuition model, which considers factors such as family income, cost of living, and household size. Through this innovative approach, Davidson Academy Online ensures that

every profoundly gifted student in the nation can access the high-quality education they rightfully deserve.¹²

Renzulli Learning

The Renzulli Learning System (RLS) is an innovative web-based tool that employs advanced instructional communication technology to enhance and engage students in their learning journeys. Initially, students' complete questionnaires to create personalized profiles, outlining their academic strengths, interests, learning styles, and preferred modes of expression. RLS then sifts through a vast selection of 35,000 resources, meticulously chosen for their high engagement levels, aligning them with each student's unique profile. These resources are categorized based on students' interests, learning styles, product preferences, age, complexity, and alignment with national and state curricular standards. Every child receives a distinct set of resources tailored to their specific needs in these dimensions.

RLS also features a digital student product management system called The Wizard Project Maker, facilitating individual and small group projects. Additionally, it offers various reporting tools to aid teachers in data-driven decisions, enabling them to monitor individual and grade-level progress, identify professional development needs, and contribute to a school district's accountability program.

Furthermore, RLS includes individual electronic portfolios for students and personal success plans for upper elementary and middle school students. These plans assist students in goal setting, identifying role models, devising plans for academic success, and exploring potential career interests. Teachers can access the extensive resource library to supplement their standard curricula, differentiate instruction for individuals and small groups, and maintain comprehensive records of student activities. One of the program's major benefits for teachers is its time-saving capability, as the computer automates the intricate task of matching resources with individual interests, learning styles, and academic strengths. RLS employs cutting-edge Web 2.0 technologies, signifying a paradigm shift from older instructional models and previous web technologies (Web 1.0) that primarily focused on passive consumption of existing content. With Web 2.0, students actively engage with the content, participate in hands-on learning experiences, and take control of their learning process, moving away from passive reception of information from external sources. (Renzulli, & Reis, 2009; Renzulli, Reis, & Shaughnessy, 2014).

¹² Retrieved from: <https://www.davidsongifted.org/gifted-programs/>

FINDINGS

CTY, Davidson Institute for Talent Development and Renzulli Learning share a common goal of serving gifted students, but they have different approaches and target audiences. CTY focuses on providing a wide range of advanced courses for gifted students in various grades. Davidson Institute offers a fully accredited online school specifically for profoundly gifted students, with an emphasis on individualized education. Renzulli Learning is a resource-matching tool that can be used by educators and parents to enhance the educational experience of gifted students within existing programs. In this study programs' theoretical basement, content, admission requirements and course evaluation were compared

Programs' Theoretical Basement

Firstly, the theoretical basement of the programs was analyzed. Table 1 presents information on the theoretical background of the programs.

Table 1.

Programs' Theoretical Basement of the Program

	Theoretical basement
CTY	-
Davidson Institute for Talent Development	-
RLS	+

As seen in the Table 1, only The Renzulli Learning System is based on theories. It is based on The Three-Ring Conception of Giftedness, The Deductive Model of Learning, The Inductive Model of Learning and High-End Learning Theory. The Three-Ring Conception of Giftedness reframes giftedness as a set of behaviors rather than innate qualities in individuals. According to this model, gifted behavior is a result of the dynamic interaction among three key clusters of human traits: above-average ability, high levels of task commitment, and a strong creative inclination. Individuals capable of displaying these gifted behaviors possess or have the potential to cultivate this combination of traits. They can use these traits interactively and apply them across various valuable domains of human achievement. Those who demonstrate or have the potential to develop this interplay among these traits require diverse educational opportunities and services that go beyond what standard instructional programs typically offer (Renzulli, 1978; Renzulli & Reis, 1997). The Deductive Model operates under the assumption that what is currently being learned will be useful in future scenarios, such as solving problems,

pursuing further education, engaging in specific careers, or handling life situations. It heavily relies on information sourced from predetermined standards, textbooks, or standardized tests. In contrast, the Inductive Model reflects the type of learning commonly experienced outside traditional classrooms. This learning occurs in diverse settings like research labs, artists' studios, theaters, film and video production sites, business offices, and various extracurricular activities where individuals work on creating products, performances, or services (Renzulli, & Reis, 2009). To grasp the true nature of high-end learning, it's essential to contrast the learning methods employed in conventional classrooms with those used in real-world situations. Traditional classrooms predominantly follow an organizational structure dictated by the necessity to acquire and integrate information and skills imposed from external sources (Renzulli, & Reis, 2009).

Programs' Content and Course Evaluation

Secondly, the content and course evaluation of the programs was analyzed. Table 2 presents information on the content of the programs.

Table 2.

Programs' Content

				Content
CTY				Virtual classrooms offer for grades 2–12 in six different disciplines.
Davidson	Institute	for	Talent	It offers summer programs, virtual events for gifted youths
Development				
RLS				It offers programs which contain enrichment and differentiation activities

As seen in Table 2, all three programs have rich content. CTY typically employs assessments, quizzes, projects, and exams to evaluate students' understanding and mastery of the course content. These assessments are often designed to be challenging and tailored to the advanced nature of the courses. Davidson Academy Online utilizes various assessment methods, including tests, projects, presentations, and assignments. The evaluation process is personalized, considering the specific strengths and challenges of each student. Additionally, there may be a focus on qualitative assessments, considering the depth of understanding and critical thinking abilities of the students. RLS, as a supplementary tool, does not provide formal

evaluations or assessments on its platform. Instead, it empowers educators and parents to monitor students' engagement and progress through their interactions with the provided resources. Evaluation methods might vary based on how educators incorporate Renzulli Learning into their teaching strategies. In summary CTY focuses on advanced courses with challenging assessments to evaluate students' understanding. Davidson Institute offers a personalized and rigorous curriculum, with assessments tailored to each student's unique abilities. RLS, while not directly providing evaluations, supports personalized learning by offering a diverse range of resources for gifted students, leaving the assessment methods to the educators and parents integrating these resources into the learning experience. Therefore, it can be inferred that evaluation systems of the programs are appropriate with their content.

Programs' Admission Requirements

Finally, the Admission Requirements of the programs were analyzed. In the web sites of the program's application procedures were shared as seen in Table 3 presents information on the application procedures of the programs.

Table 3.

Programs' Application Steps

	Application
CTY	Three steps: • Join program • Take a test • Enroll
Davidson Institute for Talent Development	Three steps: • Application program • Lottery • Deposit
RLS	Test students to identify the profile of the students then match students

Admission requirements for all three programs are not so clear on the websites, but participants have to pay a fee according to the course they take. CTY Virtual programs usually require students to complete an application process, including providing academic records, standardized test scores. Admission to Davidson Academy Online is highly competitive.

Prospective students need to demonstrate exceptional intellectual abilities through standardized test scores, academic achievements, teacher recommendations, and assessments. RLS is not an institution that requires formal admission. It is an online platform accessible to educators, parents, and students. Users, including gifted students, can access RLS through educational institutions that have subscribed to the service.

CONCLUSIONS

In conclusion, CTY, Davidson Institute for Talent Development (specifically Davidson Academy Online), and RLS each offer unique approaches to distance education for gifted students. CTY stands out for its rigorous online courses, challenging academically gifted students and providing in-depth knowledge in various subjects. Davidson Academy Online, on the other hand, specializes in serving profoundly gifted students, offering a highly personalized and comprehensive curriculum that focuses on both academic and socio-emotional development. RLS takes a supplementary role, providing a diverse database of resources tailored to match the interests and abilities of gifted students, allowing educators and parents to support personalized learning experiences.

Each program caters to different segments of the gifted student population, whether broadly academically gifted or profoundly gifted, and addresses their specific needs through distance education. As the landscape of online education evolves, these programs continue to play vital roles in nurturing the talents and abilities of gifted students, providing them with opportunities to excel and thrive in a virtual learning environment. Prospective students and their families should carefully evaluate the unique offerings of these programs to find the one that best aligns with their individual educational needs and aspirations.

REFERENCES

- Adams, C. M. & Cross, T. L. (2000). Distance learning opportunities for academically gifted students. *The Journal of Secondary Gifted Education*, 9(2), 88-96.
- Akyürek, M. İ. (2020). Uzaktan eğitim: Bir alanyazın taraması [Distance Education: A Literature Review]. *Medeniyet Eğitim Araştırmaları Dergisi*, 4(1), 1-9.
- CDLP. (2004). Adult learning activities: What is distance learning? Retrieved from <http://www.cdlponline.org/index.cfm?fuseaction=what is>
- Garrison, R. (2000). Theoretical challenges for distance education in the 21st century: A shift from structural to transactional issues. *International Review of Research in Open and Distributed Learning*, 1(1), 1-17.
- İşman, A. (1998). *Uzaktan eğitim [Distance education]*. Sakarya: Değişim.
- Mantyla, K., & Gividen, R. (1997). *Distance learning: A step-by-step guide for trainers*. Alexandria, VA.: American Society for Training and Development.
- Olszewski-Kubilius, P. & Lee, S. Y. (2004). Gifted adolescents' talent development through distance learning. *Journal for the Education of the Gifted*, 28, 7-35.
- Renzulli, J. S. (1978). What makes giftedness? Re-examining a definition. *Phi Delta Kappan*, 60, 180-184.
- Renzulli, J. S., & Reis, S. M. (1997). *The schoolwide enrichment model: A comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.
- Renzulli, J. S., & Reis, S. M. (2009). A technology-based application of the Schoolwide Enrichment Model and high-end learning theory. In L. V. Shavinina (Ed.), *International handbook on giftedness* (Part Two, pp. 1203-1223). New York, NY: Springer.
- Renzulli, J., Reis, S., & Shaughnessy, M. F. (2014). A reflective conversation with Joe Renzulli and Sally Reis: About the Renzulli learning system. *Gifted Education International*, 30(1), 24-32.
- Rovai, A. P., Ponton, M. K., & Baker, J. D. (2008). *Distance learning in higher education*. New York: Teachers College.
- Shaughnessy, M. F. (2008). An interview with... Collen Harsin: High potential and the Davidson Academy. *Parenting for High Potential*, 7.
- Simpson, O. (2012). *Supporting students for success in online and distance education*. Oxon: Taylor&Francis.
- Uşun, S. (2006). *Uzaktan eğitim [Distance education]*. Ankara: Nobel.

- Wallace, P. (2009). Distance learning for gifted students: Outcomes for elementary, middle, and high school aged students. *Journal for the Education of the Gifted*, 32(3), 295-320.
- Yenal, A. Ç. (2009). *Distance education* (Unpublished Master Thesis). İstanbul: Yeditepe University.

The Yield of the Climate Crisis Circular Economy and Turkey

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Abstract

The climate crisis, which became increasingly evident with the fluctuations in the world markets and economy after the 2000s, caused countries to question the linear economy model they were applying. Therefore, the current process brings all resource-related problems to light as it suppresses expenditures in countries.

Therefore, developed countries, especially European countries, are in the transition phase from a linear economy model to a circular economy model. The long-term use of all resources is essential in the circular economy, rather than the buy-and-dispose model in the linear economy. On the other hand, there is a situation of scarcity of resources due to the climate crisis. For example; Access to resources such as water, food, energy and fossil fuels is becoming increasingly difficult. Similarly, biodiversity in the international system is declining and financial systems are crashing nearly all economies. However, in the Circular Economy; It is essential to strengthen inter-sectoral cooperation in order to reduce waste and increase the efficiency of resources. Thus, the waste of one company can be the raw material of another company and by keeping the resources in the loop, it will be possible to use the resources as long as possible, to save energy and reduce waste.

While the importance of the circular economy and its examples in the world are included in the study, the circular economy practices in Turkey will be examined in light of the data obtained from the relevant institutions and organizations in the second part.

Keywords: Circular Economy, Turkey, Climate Crisis.

JEL Codes: Q53, Q54, O57.

Introduction

The yield of the climate crisis circular economy refers to the potential positive outcomes for the economy that result from taking actions to mitigate the impacts of climate change. This can

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include the creation of new jobs and industries, as well as increased energy efficiency and reduced greenhouse gas emissions.

In Turkey, the adoption of a climate crisis circular economy approach would involve shifting the country's focus towards renewable energy sources, promoting sustainable agriculture, and investing in energy-efficient technologies. These efforts would help Turkey reduce its carbon footprint and address the effects of the changing climate, while also promoting economic growth and stability.

However, the transition to a climate crisis circular economy requires significant investment and changes to existing infrastructure and systems. It will also likely face resistance from some industries and groups who may be negatively impacted by the shift towards sustainable practices.

Overall, while the yield of a climate crisis circular economy in Turkey will require effort and investment, it offers the potential for significant long-term benefits for both the environment and the economy.

Climate Crisis and Economy Relations in The Globe

The Climate crisis is one of the most pressing issues facing the world today. The fluctuations in the world markets and economy after the 2000s have made it increasingly clear that the traditional linear economy model, which relies on the constant extraction and consumption of finite resources, is no longer sustainable. In response, developed countries, particularly in Europe, are moving towards a more circular economy model that prioritizes the long-term use of resources (World Economic Forum, 2022).

The linear economy model is characterized by a focus on short-term gains and the exploitation of resources for immediate consumption, with little regard for the future. This model has resulted in resource scarcity, declining biodiversity, and financial instability, all of which are contributing to the current climate crisis (Velenturf and Purnell, 2021: 1440-1442).

The circular economy model, on the other hand, emphasizes the efficient use of resources and the reduction of waste. In this model, inter-sectoral cooperation is essential, as waste from one company can become the raw material for another. By keeping resources in circulation, they can be used for as long as possible, reducing the need for additional extraction and conserving energy (Velenturf and Purnell, 2021: 1437-1447).

One example of a successful transition to a circular economy is the Netherlands, which has implemented a closed-loop system for the production and use of materials. This system emphasizes the reuse of resources, and has resulted in increased efficiency, reduced waste, and a more sustainable economy (European Environmental Agency, 2016). Another example is the city of San Francisco, which has committed to becoming a zero-waste city by 2020 (Centre for Public Impact, 2016). This goal has been achieved through a combination of public and private sector initiatives, including the implementation of composting and recycling programs, and the promotion of sustainable products and practices.

In Turkey, the adoption of a circular economy approach will require significant investment and changes to existing infrastructure and systems. However, the long-term benefits for both the environment and the economy are substantial. The government and private sector can work together to promote the use of renewable energy sources, invest in energy-efficient technologies, and support sustainable agriculture.

In conclusion, the climate crisis is calling for a major shift in the way we think about and use resources. The transition from a linear to a circular economy is crucial for reducing waste, conserving energy, and promoting economic stability. While this transition will require effort and investment, the long-term benefits for the environment and the economy are substantial, and countries like Turkey have the potential to play a leading role in this important transition.

Circular Economy Examples in the Global World and Turkey

The circular economy aims to use all resources efficiently and sustainably. This economic model keeps waste to a minimum and ensures that energy and resources are used in a sustainable way without being affected. The circular economy can be achieved by redesigning and better planning the consumption and production processes (Hysa et al., 2020:1-3).

Circular economy practices can increase the well-being of society and businesses, as well as environmental and economic benefits. For example, waste management and recycling programs ensure that waste is reused and regenerated. This increases the efficient use of resources, resulting in energy savings and reduction of CO2 emissions (OECD, 2021).

There are many studies and projects on circular economy practices in Turkey. However, there is still a long way to go for these practices to be widely disseminated. In order for the country

to achieve its environmental and economic goals, it is necessary to accelerate the transition to the circular economy model.

As a result, the circular economy model, which emerged as a result of the climate crisis, aims to use all resources efficiently and sustainably (Özuyar, 2021:20-21). This model can be implemented by redesigning and better planning the consumption and production processes. There are studies on circular economy practices in Turkey, but there is still a way for wider applications to become widespread. In order for the country to achieve its environmental and economic goals, it is important to accelerate the transition to the circular economy model. On the other hand in Turkey there are several different types of such agglomerations serving as circular economy tools. These are (Özuyar, 2021: 23-25):

- 1- Organised Industrial zones (OIZ); are the earliest examples of aggregating a group of industries in order to provide them with improved access to basic services.
- 2- Industrial Zones: The purpose of the industrial zones is to provide investment areas suitable for large-scale and technology-intensive investments. 6 private industrial zones, as mixed or specialized, are planned in Bursa, İstanbul, Martin, Balinese and İzmir.
- 3- Free zones; are defined as special sites within the country that are deemed to be outside of the customs territory
- 4- International Association of Science Parks , it is an enterprise that is in either an official or activity-based relationship with one or more university or higher education institution and research centres.
- 5- Industrial Symbiosis; is the exchange of not-wanted material -many times referred to as waste- of one company with a second company, although such exchanges can be done with services or infrastructure

- Examples of circular economy practices around the world can be listed as follows:

1. Unilever: Unilever is a world-class food and personal care company working for a sustainable circular economy. Unilever aims to reduce its waste and recycle its products, thereby supporting the circular economy (Unilever, 2017).
2. Philips: Philips is a worldwide electronics company and aims to use recycled materials. Philips aims to recycle its products and reduce waste, thereby supporting the circular economy (Philips, 2022).

3. Patagonia: Patagonia is a worldwide wearables company and aims to reduce its waste. Patagonia ensures the recycling and reuse of its products, thus supporting the circular economy (Ram, 2022).

4. IKEA: IKEA is a worldwide furniture company and works for a sustainable circular economy. IKEA aims to recycle its products and reduce waste, thus supporting the circular economy (IKEA, 2022).

- More specific examples of circular economy practices in Turkey can be listed as follows:

1. Ege Seramik: Ege Seramik is a ceramic manufacturer based in Turkey and aims to recycle its wastes. Ege Seramik reuses its wastes in line with its zero waste target and attaches importance to energy efficiency in the production process (Ege Seramik, 2021).

2. Zeybek Energy: Zeybek Energy is an energy producer based in Turkey and focuses on energy efficiency. Zeybek Energy produces energy using renewable energy sources and thus supports the circular economy (Zeybek Proje, 2021).

3. Çamlıca Water: Çamlıca Water is a water treatment plant located in Turkey and aims to use water resources efficiently. Çamlıca Water ensures the treatment and reuse of wastewater and thus supports the circular economy.

4. Biofarm Tarım: Biofarm Tarım is an agricultural organization in Turkey and aims to increase soil fertility. Biofarm Tarım ensures the use of wastes for agricultural purposes and increases soil fertility, thus supporting the circular economy (Biofarm Tarım, 2021).

These examples show how circular economy practices in the world and in Turkey can be implemented specifically. However, municipalities in Turkey have also turned to recycling, which is a requirement of the circular economy.

Conclusion

There is a strong link between the climate crisis and the circular economy. The climate crisis is the result of the linear economy model, where resources are extracted, used, and then discarded as waste. This model is not sustainable and leads to depletion of resources, increased waste, and increased greenhouse gas emissions, which contribute to the climate crisis.

On the other hand, the circular economy model promotes the efficient use of resources, reduction of waste, and reduction of greenhouse gas emissions. By keeping resources in use for

as long as possible and minimizing waste, the circular economy helps to address the climate crisis.

In addition, the circular economy also promotes the use of renewable energy sources, such as wind and solar power, which can reduce reliance on fossil fuels and decrease greenhouse gas emissions.

By promoting a more sustainable use of resources and reducing waste, the circular economy can help to address the climate crisis and create a more sustainable future.

Bibliography

Biofarm Tarım (2021). Who we are?, <https://www.biofarmtarim.com.tr/#> (17.12.2022).

Centre for Public Impact (2016). San Francisco's Zero Waste 2020 Target. 18 April, <https://www.centreforpublicimpact.org/case-study/zero-waste-san-francisco#:~:text=In%202003%2C%20the%20city%20of,average%20was%20about%2035%20percent.> (18.09.2022).

Ege Seramik (2021). Ege Seramik 2021 Annual Report, <https://www.egeseramik.com/dosya/61892b3f8c..pdf> (19.12.2022).

European Environmental Agency (2016). A Circular Economy in the Netherlands by 2050, Government-wide Programme for a Circular Economy, https://circulareconomy.europa.eu/platform/sites/default/files/17037circulaireconomie_en.pdf (12.12.2022).

Hysa, E., Alba K., Naqeeb Ur R., and Rafael L. (2020). Circular Economy Innovation and Environmental Sustainability Impact on Economic Growth: An Integrated Model for Sustainable Development. Sustainability, 12, no.12: 4831. <https://doi.org/10.3390/su12124831>.

IKEA (2022). Transforming into a circular business, <https://about.ikea.com/en/sustainability/a-world-without-waste> (12.12.2022).

OECD (2021). Towards a more resource-efficient and circular economy-The role of the G20. G20 Italy 2021, <https://www.oecd.org/environment/waste/OECD-G20-Towards-a-more-Resource-Efficient-and-Circular-Economy.pdf> (14.12.2022).

- Özuyar, P. (2021), Circular Economy Practices in Turkey and Their Potential Interaction with Climate Change Mitigation and Adaptation, ARHUSS, (2021), 4(1):18-32.
- Philips (2022). The circular imperative, <https://www.philips.com/a-w/about/environmental-social-governance/environmental/circular-economy.html> (19.12.2022).
- Ram, A. (2022). Our Quest for Circularity, <https://eu.patagonia.com/hr/en/stories/our-quest-for-circularity/story-96496.html> (18.11.2022).
- Unilever (2017). Unilever commits to 100% recyclable plastic packaging by 2025. 16 January, <https://www.hul.co.in/news/press-releases/2017/unilever-commits-to-100-recyclable-plastic-packaging-2025/> (12.12.2022).
- Velenturf, A.P.M and Purnell, P. (2021). Principles for a sustainable circular economy. Sustainable Production and Consumption, Volume 27, 1437-1457, ISSN 2352-5509.
- World Economic Forum (2022). What is the circular economy and why does it matter?. 14 Jun, <https://www.weforum.org/agenda/2022/06/what-is-the-circular-economy/> (12.12.2022)
- Zeybek Proje (2021). Sustainable Power, <http://www.zeybekproje.com.tr/hakkimizda.html#> (18.12.2022).

Securitizing Immigration in Turkey

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Abstract

The concept of security has changed and transformed in the historical process. The reason for this is that each field makes its own definition of security from an individual, society, national and international perspective. As a result, many schools of thought have emerged that are interested in this field. Copenhagen School, one of them, has taken the concept of security internationally and moved this field to the field of securitization, which is another important dimension.

The study aims to examine the securitization of migration policies in Turkey's historical process in the perspective of the securitization argument. In the study, only the steps taken for the recent Syrian immigrants will not be included, but Turkey's immigration securitization policies will be examined as a whole. Therefore, the orientation and securitization of post-republic migration to Turkey will form the general framework of the study. The main parameters in the securitization of migration in Turkey are within the reports of relevant national and international institutions; the stability of the country and its economic, social and political situation, as well as the numbers and trends of immigrants.

Keywords: Turkey, Securitization, Migration, Security, Copenhagen School.

JEL Codes: F52, H55, H56.

Introduction

Securitizing immigration refers to the process of framing immigration as a security issue, thereby legitimizing the use of security measures to manage and control it. In the case of Turkey, immigration has become an increasingly important issue in recent years. The country is both a destination and transit point for migrants from various countries in the Middle East and Africa. This has led to concerns about border security, national security, and social stability, which have fueled a debate about how best to manage immigration in Turkey.

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The government has responded by implementing a number of measures aimed at securitizing immigration, including increased border controls, greater cooperation with other countries on border security, and the establishment of immigration detention centers. At the same time, human rights organizations have criticized these measures for being inhumane and violating the rights of migrants.

It is important to consider the broader context of immigration in Turkey, including the country's political, economic, and social conditions, as well as the historical and cultural perspectives that shape the discourse on immigration. The paper should also examine the impact of these securitizing measures on both migrants and Turkish society, and assess the effectiveness of these policies in addressing the underlying issues associated with immigration.

The study aims to delve deeper into the historical evolution of securitizing migration policies in Turkey. It seeks to understand how the concept of security has changed and transformed over time and how different fields have defined security from different perspectives, such as individual, societal, national, and international. This is particularly relevant as security has become a major concern for many countries, including Turkey, due to increased migration flows and the associated challenges.

To this end, the study will draw on the concept of securitization introduced by the Copenhagen School, which has helped to bring the concept of security to the international arena and shed light on the process of securitizing migration policies. The study will focus on the historical process of securitizing migration policies in Turkey, examining the country's immigration policies as a whole, rather than just looking at the recent measures taken for Syrian immigrants. This is crucial in understanding the broader context of migration in Turkey, including the country's political, economic, and social conditions, as well as the historical and cultural perspectives that shape the discourse on immigration.

Securitizing Immigration in Turkey at The Copenhagen School Perspective

The Copenhagen School is a theoretical framework that deals with the study of security in international relations. The School was developed by a group of scholars at the University of Copenhagen in the 1990s and is known for its innovative approach to the study of security (Filimon, 2016: 49-52).

According to the Copenhagen School, security is not an objective reality, but rather a socially constructed concept that is politically and culturally defined. The School argues that security is not a fixed or static concept, but rather a dynamic and constantly evolving one.

In terms of migration, the Copenhagen School argues that migration can be securitized when it is defined as a threat to the political and social stability of a state. This occurs when politicians and policy-makers portray migration as a security issue, highlighting the potential risks and dangers posed by irregular migration (Innes, 2015: 31).

The Copenhagen School argues that securitization is not a linear or straight forward process, but rather a complex and multi-faceted one that is shaped by a range of political, social, and cultural factors. It also highlights the role of key actors, such as politicians and policy-makers, in shaping the securitization of migration and in constructing migration as a security issue (Diskaya, 2013).

In addition, the Copenhagen School also sheds light on the wider implications of the securitization of migration. By framing migration as a security issue, the School argues that the securitization of migration can lead to increased restriction and control over migration, as well as heightened security measures aimed at preventing irregular migration (Diskaya, 2013).

However, the School also warns against the potential negative consequences of securitizing migration, including the violation of human rights, the criminalization of migration, and the marginalization of migrant populations (Glower, 2011: 77-79).

In conclusion, the Copenhagen School's approach to the securitization of migration highlights the dynamic and evolving nature of security and the role of key actors in shaping the securitization process. The School's approach emphasizes the need for a nuanced and critical understanding of the securitization of migration, and the importance of examining the complex political, social, and cultural factors that influence the construction of migration as a security issue.

Turkey has a rich and diverse history of migration, dating back to the Ottoman Empire. In the 19th and early 20th centuries, the Ottoman Empire was home to various ethnic and religious communities, including Armenians, Greeks, Jews, and others. During this period, the empire experienced a significant wave of migration, both within its borders and from neighboring countries.

In the post-World War II period, Turkey became a destination for labor migration, particularly from the Balkans, the Middle East, and North Africa. This was driven by the country's rapid economic development and the need for low-skilled labor in its growing industries. During this period, Turkey signed several agreements with neighboring countries to regulate labor migration, including the 1952 Labor Agreement with Greece and the 1956 Labor Agreement with Yugoslavia (Abdulal, 2016: 1474-1476; Kirişçi, 2003).

In the 1960s and 1970s, Turkey became a destination for political refugees, particularly from neighboring countries, such as Cyprus, Iran, Iraq, and Syria. In the 1990s, Turkey became a transit country for refugees from the Caucasus region and Afghanistan (İçduygu and Aksel, 2013: 170-176).

In 2011, the outbreak of the Syrian civil war led to a significant increase in the number of Syrian refugees in Turkey. As of 2021, Turkey is home to over 3.6 million registered Syrian refugees, making it the largest host country for refugees globally. The sudden influx of refugees placed significant pressure on the country's infrastructure and resources, leading to the implementation of stricter migration policies and the securitization of migration (UNHCR, 2022).

In response to the refugee crisis, Turkey signed the EU-Turkey Statement in March 2016, which aimed to reduce the number of irregular migrants crossing into the EU and improve the conditions of refugees in Turkey. The agreement included provisions for the return of irregular migrants to Turkey and the resettlement of Syrian refugees from Turkey to EU countries (Terry, 2021).

In addition, Turkey introduced the Temporary Protection Regulation in 2014, which aimed to address the security concerns associated with the sudden influx of Syrian refugees and provide basic services, such as healthcare and education, to refugees. The regulation also established the Disaster and Emergency Management Authority (AFAD) as the primary institution responsible for providing services to refugees (Ministry Interior of Turkey, 2022).

Overall, the history of migration to Turkey is characterized by periods of both migration and integration, as well as periods of stricter migration policies and securitization. The country's experience reflects the broader global trends and challenges associated with migration, and highlights the need for a comprehensive and humane approach to managing migration and refugees.

In recent years, the securitization of migration has become a major political and social issue in Turkey. The country's conservative government has taken a hardline stance on migration, arguing that irregular migration poses a threat to national security and stability.

In line with this stance, Turkey has introduced several measures to secure its borders and limit the flow of irregular migrants. These measures include the construction of a border wall with Syria, increased border patrols, and the deployment of additional security forces to the border regions. The government has also introduced stricter visa and residency requirements for migrants, including stricter background checks and more stringent identity verification processes.

In addition, Turkey has taken steps to combat human trafficking and smuggling networks, which are often associated with irregular migration. The government has increased cooperation with neighboring countries and international organizations to crack down on these networks and prevent the exploitation of migrants (Gül and Sarıkaya Güler, 2016: 110-112).

Despite these measures, irregular migration remains a major challenge for Turkey. The country is home to large numbers of refugees and migrants, many of whom are in need of basic services and support. The government's securitization policies have been criticized for failing to address the root causes of migration, such as poverty, conflict, and human rights abuses, and for not providing adequate support to refugees and migrants.

The securitization of migration in Turkey has also led to tensions with the European Union, which has long been critical of Turkey's human rights record and its treatment of refugees and migrants. The EU has expressed concerns over the conditions facing refugees and migrants in Turkey, including access to basic services and protections, and has called on Turkey to respect its obligations under international law (İçduygu and Aksel, 2018)

In conclusion, the securitization of migration in Turkey reflects the country's broader political and social context, as well as its evolving relationship with the European Union and the international community. It highlights the need for a comprehensive and humane approach to managing migration and refugees, one that takes into account the root causes of migration and provides adequate support and protections to refugees and migrants.

The ongoing conflict in Ukraine has also had an impact on migration to Turkey. In recent years, thousands of Ukrainian citizens, including ethnic Tatars and other minority groups, have fled the conflict and sought refuge in Turkey.

The Turkish government has responded to the influx of Ukrainian refugees by providing basic support and services, including housing, health care, and education. The government has also established programs to help refugees integrate into Turkish society and access employment opportunities.

Despite these efforts, the situation of Ukrainian refugees in Turkey remains challenging. Many face difficulties accessing basic services, including health care and education, and struggle to find employment. The limited resources and support available to refugees has led to high levels of poverty and inequality among the Ukrainian community in Turkey (OCHA, 2022).

The arrival of Ukrainian refugees has also raised questions about the future of migration in Turkey. The conflict in Ukraine highlights the need for a comprehensive and humane approach to managing migration, one that takes into account the root causes of migration and provides adequate support and protections to refugees and migrants (OCHA, 2022).

In conclusion, the migration of Ukrainian refugees to Turkey is a complex and evolving issue, reflecting the broader political, social, and economic context of the conflict in Ukraine and its impact on the region. It highlights the need for a coordinated and effective response to migration, one that takes into account the needs and rights of refugees and migrants, and supports their integration into host communities.

Studies on the securitization of migration in Turkey focus on examining Turkey's migration policies and practices in the historical process. In the period from the establishment of the Republic of Turkey to the present, various legal regulations and practices have been made regarding the securitization of migration.

For example, in the 1970s and 1980s, Turkey made agreements with European Union countries to control the entry and working conditions of migrant workers. During the same period, Turkey introduced legislation to control the deportation and regular migration of migrant workers (İçduygu and Aksel, 2013: 173-175).

In the 2000s, studies on the securitization of migration in Turkey intensified. During this period, Turkey made legal arrangements aimed at the safety of immigrants and the protection of human rights. At the same time, Turkey has intensified its work aimed at controlling the security of migrants and their migration (İçduygu and Aksel, 2013: 180-185).

In recent years, the most important work on the securitization of migration in Turkey has been the work to protect the safety and human rights of immigrants from Syria. These studies include

the implementation of agreements and legal arrangements between countries where Turkey is allowed to migrate or not.

In particular, Turkey has encountered various waves of migration throughout the 20th century and felt the need to manage these waves of migration. During these periods, Turkey made many legal arrangements in order to ensure the security of immigrants and to maintain economic, social and political stability. For example, in the 1930s, Turkey, as a country that received immigration from European countries, made legal arrangements to regulate the working and living conditions of immigrants (İçduygu and Aksel, 2013: 171-180).

Later, Turkey updated its policies towards immigrants from Eastern European countries and the Union of Soviet Socialist Republics (USSR) in the 1980s. In this period, the policies implemented towards immigrants were aimed at ensuring the security of immigrants and maintaining economic, social and political stability (İçduygu and Aksel, 2013: 174-178).

In the 2010s, Turkey faced a wave of migration that emerged as a result of the migration of Syrians. In this period, Turkey updated its immigration policies towards Syrians, and these policies were aimed at ensuring the safety of immigrants, maintaining economic, social and political stability, and providing suitable working and living conditions for immigrants (İçduygu and Aksel, 2013: 182-183).

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Studies conducted in the historical process of Turkey's migration policies show an approach towards securitization of migration. These studies were carried out in order to ensure the security of immigrants, to protect economic, social and political stability and to provide suitable working and living conditions for immigrants.

Studies have been carried out on the Ukrainian immigrants who came to Turkey as a result of the Ukraine war, in terms of Turkey's migration management and securitized migration policies. These studies show how Turkey approaches immigration problems, changes in the number of immigrants, how the social, economic and political situation of immigrants affects their security and how Turkey approaches immigrants. In addition, data on the current situation and future expectations of the immigrants who came to Turkey after the Ukraine war can be examined.

Turkey has taken steps towards the implementation of immigration securitization policies with the emergence of social, economic and security problems in regions where the number of immigrants is high and where immigrants settle. These may include applications such as

registration and monitoring of immigrants, establishment of economic and social support programs for immigrants, and deportation of immigrants. At the same time, he worked on the implementation of migration agreements with Turkey, the European Union and other international organizations.

In the process of implementing migration securitization policies, it was emphasized that Turkey should respect the human rights and freedoms of immigrants. However, it has been reported that the rights of immigrants are violated and discriminatory practices occur from time to time in Turkey. For this reason, it was emphasized that Turkey's immigration securitization policies should aim at respecting the human rights of immigrants and ensuring equality.

In recent years, Turkey has enacted many policies and legal regulations in order to increase migration security. These include (Presidency of Foreigners Border Refugee Department, 1999: 11) :

- Determining the official status of Syrian immigrants and making legal arrangements
- Safe and human-rights sheltering of immigrants
- Providing immigrants with education, health services, job opportunities and other social services
- Protecting the rights of migrant workers and providing regular work opportunities
- Deportation of illegal immigrants and prevention of migrant smuggling.

However, Turkey implements the following policies in order to increase migration security in general (Abdulal, 2016: 1476-1477):

- Official registration and documentation of immigrants
- Safe and human-rights sheltering of immigrants
- Providing immigrants with education, health services, job opportunities and other social services
- Deportation of illegal immigrants and prevention of migrant smuggling
- Protecting the rights of migrant workers and providing regular work opportunities
- Developing cooperation and dialogues with the European Union on immigration issues.

Conclusion: Recommendations to Turkey About Securization of Migration

Although Turkey has taken many political and legal measures throughout history in order to increase immigration security, it is obvious that it has social problems. In this context, it is possible to give the following suggestions regarding the securitization of migration to Turkey:

- Developing cooperation and dialogues with the European Union on immigration issues
- Protection of the human rights of immigrants and provision of housing, education, health services, job opportunities and other social services in accordance with universal human rights standards.
- Execution of the deportation process of illegal immigrants in a human rights-appropriate and fair manner
- Protecting the rights of migrant workers and providing regular work opportunities
- Strengthening border security and preventing migrant smuggling
- Promoting the social integration of immigrants and protecting the rights of minorities.

From this perspective, Turkey can cooperate with the following institutions on migration security issues:

- European Union and other countries: Turkey can cooperate on migration security issues by developing the European Union and its dialogues. It can also establish similar collaborations with other countries.
- International Migration and Human Rights Institutions: Turkey, in cooperation with international migration and human rights institutions, can address issues such as protection of immigrants' human rights and shelter.
- Non-Governmental Organizations: Turkey, in cooperation with non-governmental organizations, can address issues such as education, health services, job opportunities and other social services for immigrants.
- Employers and Workers' Unions: Turkey can deal with issues such as protecting the rights of migrant workers and providing regular work opportunities by cooperating with employer and labor unions.

These collaborations can make it possible to create more effective policies on immigration security issues and to protect the rights of immigrants. Turkey can achieve the goal of increasing migration security through cooperation. However, these collaborations are only part of it. Turkey should also consider national security in order to increase migration security. For this, Turkey can take the following moves:

- Strengthening border security: Turkey should try to prevent illegal migration and smuggling by making its borders secure.
- Official registration and documentation of migrants: Turkey can help prevent migrant smuggling by formally registering and documenting migrants.
- Safe accommodation of immigrants in accordance with human rights: Turkey should ensure that immigrants are accommodated in accordance with human rights.
- Execution of the deportation process of illegal immigrants in a human rights-appropriate and fair manner: Turkey should pay attention to the execution of the deportation process of illegal immigrants in a human rights-appropriate and fair manner.

As a result, Turkey is on the migration routes due to its geostrategic location. Throughout history, measures have been tried to be taken on migration and the securitization of migration on political and legal platforms. However, in the 21st century, it is one of the most important issues to consider the socio-economic perspective.

Bibliography

- Abdulal, A. I. (2016). Turkish Immigration Policies: Challenges End Responses. Suleyman Demirel University The Journal of Faculty of Economics and Administrative Sciences, Y.2016, Vol.21, No.4, pp.1465-1485.
- Diskaya, A. (2013). Towards a Critical Securitization Theory: The Copenhagen and Aberystwyth Schools of Securit Studies, E-International Relations, ISSN 2053-8626, <https://www.e-ir.info/pdf/32981> (12.12.2022).
- Filimon, L.M. (2016). An overview of the Copenhagen school's approach to security studies: constructing (in)security through performative power. The Romanian Journal for Baltic and Nordic Studies 8(2):47-72.
- Glover, R. W. (2011). The Theorist And The Practitioner. Geopolitics, History, and International Relations, Vol. 3, No. 1, 77-102.
- Gül, M. and Sarıkaya Güler, T. (2016). Trafficking in Human Beings in Global Age: A Case Study of Turkey. JEBPIR, 2 (2), 93-117.
- Innes, A. J. (2015). Migration, Citizenship and the Challenge for Security. An Ethnographic Approach, London and New York: Palgrave Macmillan.

- İçduygu, A. and Aksel, D.B. (2013). Turkish Migration Policies: A Critical Historical Retrospective. *Perceptions*, Autumn, Volume XVIII, Number 3, pp. 167-190.
- İçduygu, A. and Aksel, D.B. (2018). National Report on Turkey: Patterns of Politicization on Refugees and Policy Responses. *Ceaseval Research On The Common European Asylum System*; Nr. 10, Chemnitz, November, http://ceaseval.eu/publications/10_Aksel_Icduygu_TurkeyNationalReport_WP5.pdf (19.11.2022).
- Kirişçi, K. (2003). Turkey: A Transformation from Emigration to Immigration. *Migration Information Source*, 1 November, <https://www.migrationpolicy.org/article/turkey-transformation-emigration-immigration> (13.12.2022).
- Latif, D. (2002). Refugee Policy Of The Turkish Republic. *The Turkish Yearbook of International Relations*, vol. XXXIII, N. 33, 1-29.
- Ministry Interior of Turkey (2022). Temporary Protection in Turkey, <https://en.goc.gov.tr/temporary-protection-in-turkey> (19.12.2022).
- OCHA (2022). Ukrainian Refugees in Turkey. SITUATION REPORT, A Brief Look at the Humanitarian Needs and Responses, 12 April, file:///C:/Users/Administrator/Downloads/Ukrainian%20Refugees%20in%20Turkey%20RNA%20-%20Situation%20Report.pdf (19.12.2022).
- Presidency of Foreigners Border Refugee Department (1999). Approach to Refugee Law in Turkish Legislation, illegal immigration and Human Smuggling', Report of the Ministry of Internal Affairs General Directorate of Security.
- Terry, K. (2021). The EU-Turkey Deal, Five Years On: A Frayed and Controversial but Enduring Blueprint, 8 April, *Migration Information Source*, <https://www.migrationpolicy.org/article/eu-turkey-deal-five-years-on> (22.12.2022).
- UNHCR (2022). Refugees and Asylum Seekers in Turkey, <https://www.unhcr.org/tr/en/refugees-and-asylum-seekers-in-turkey> (18.12.2022).

An Empirical Investigation on the Nexus between the Internet and Trade in Services

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Abstract

This study analyzes the nexus between the Internet and international trade in services using panel data from 41 countries over the period 1995-2019. While the share of the Internet users in the total population represents the Internet, trade in services is split up into two sub-models as service exports and imports. In this context, service exports and imports models are constructed and estimated by utilizing the Driscoll-Krooy estimation technic. The study also includes a few control variables, which are considered as main determinants of service trade in many studies, to reach more consistent results. The findings of the study confirm the encouraging impact of the Internet on both services exports and imports. Demand factors, which are represented by the economic output of the rest of the world in the exports model and of the importer country in the imports model, respectively, are significantly found to be supportive factors for service exports and imports. Additionally, financial development matters for further service exports and imports since it positively and significantly affects them. Overall results refer that an increase in the number of Internet users would bring about more international trade in services through principally its reducing impact on fixed costs such as searching, transaction, transportation, and communication concerning cross-border trade. Providing more access to the Internet, therefore, would help to increase the exports and imports of services.

Keywords: The Internet, Services Exports, Services Imports, Panel Data Analysis.

JEL Codes: C23, F14, M15.

1. Introduction

The importance of the service sector has been continuously increasing all over the world since it considerably creates income and employment, leading to improvements in economic welfare. The value-added of the service sector consisted of 63.9% of the gross domestic product (GDP) over the world in 2021. This statistic was 77.6% for the United States, 71.6% for the United Kingdom, 70.4% for France, and 69.9% for Japan in the same year. The service sector also provided approximately half of total employment in the world, 80.9% in the United Kingdom, 79.2% in the United States, and 77.9% in France in 2021. Increasing value-added share of the service sector to economies brought with growing service trade between countries.

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In line with this development, post-1980s, international service trade has begun to grow faster than merchandise trade. The value of international trade in services, which corresponds to 14.18% of GDP and 22.9% of trade in total goods and services, was 14.3 trillion dollars in 2022 with a growth rate of 15.3% from the previous year (WD-WDI, 2023; WTO, 2023).

Although an important part of world service trade is carried out by developed countries, developing ones also draw attention to their increasing share in service trade. Table 1 shows the course of trade developments of commercial services and their sub-components in terms of nominal trade values and the shares of sub-service components in total services trade.

Commercial services are classified under the headings of goods-related services, transport, travel, and other commercial services. With a value of 214 billion dollars in 2021, goods-related services account for 3.6% of commercial services exports. Transport, on the other hand, meets 19.3% of commercial services exports with a value of 1.1 trillion dollars. Travel constitutes 10.3% of commercial services exports with a value of 615 billion dollars. More than half (66.8%) of all commercial services exports, with a value of 4 trillion dollars, fall under the scope of other services. Under the category of other services, whose share in commercial services trade has increased over time, construction meets 1.7% of commercial services exports with a value of 102 billion dollars, while insurance and pension services meet 3.1% of commercial services exports with a value of 183 billion dollars. In this regard, the share of financial services is 10.5% with a value of 630 billion dollars, the share of charges for the use of intellectual property is 7.5% with a value of 452 billion dollars, and the share of telecommunications, computer and information services is 14.9% with a value of 896 billion dollars. While other business services constitute 26.6% of commercial services exports with a value of 1.6 trillion dollars; personal, cultural and recreational services meet 1.7% of commercial services exports with a value of 103 billion dollars. Compared to the year 2000, the shares of the services in the other services category in the world services trade increased, despite the decreasing share of the exports of transport and travel services. At this point, the increase in trade of financial services, telecommunication, computer and information services draws attention.

Table 1: Composition of Sub-Components of Commercial Services in the World (Exports)

	2000	2005	2010	2015	2020	2021
Commercial services*	1.491 (100)	2.629 (100)	3.908 (100)	4.938 (100)	5.106 (100)	5.994 (100)
Goods-related services	52 (3.5)	89 (3.4)	128 (3.3)	163 (3.3)	191 (3.8)	214 (3.6)
- Manufacturing services on physical inputs owned by others	34 (2.3)	58 (2.2)	82 (2.1)	90 (1.8)	107 (2.1)	127 (2.1)
- Maintenance and repair services	17 (1.2)	32 (1.2)	46 (1.2)	73 (1.5)	84 (1.6)	87 (1.4)
Transport	346 (23.3)	580 (22.1)	821 (21.1)	896 (18.2)	856 (16.8)	1.158 (19.3)
- Sea transport	199 (13.4)	254 (9.7)	385 (9.8)	382 (7.7)	410 (8.1)	558 (9.3)
- Air transport	71 (4.8)	213 (8.1)	268 (6.9)	315 (6.4)	205 (4.1)	290 (4.8)
- Other modes of transport	73 (4.9)	102 (3.9)	156 (3.9)	182 (3.7)	219 (4.3)	281 (4.7)
- Postal and courier services	2 (0.2)	10 (0.4)	12 (0.3)	16 (0.3)	22 (0.4)	30 (0.5)
Travel	477 (31.9)	699 (26.6)	963 (24.6)	1.205 (24.4)	553 (10.9)	615 (10.3)
Other commercial services	667 (44.7)	1.262 (47.9)	1.996 (51.1)	2.675 (54.2)	3.505 (68.6)	4.007 (66.8)
- Construction	30 (2.1)	46 (1.7)	85 (2.2)	96 (1.9)	92 (1.8)	102 (1.7)
- Insurance and pension services	27 (1.8)	65 (2.5)	97 (2.5)	121 (2.4)	161 (3.2)	183 (3.1)
- Financial services	97 (6.5)	233 (8.8)	369 (9.4)	458 (9.3)	561 (10.9)	630 (10.5)
- Charges for the use of intellectual property	91 (6.1)	172 (6.5)	246 (6.3)	333 (6.7)	396 (7.7)	452 (7.5)
- Telecommunications, computer, and information services	79 (5.4)	179 (6.8)	317 (8.1)	481 (9.7)	751 (14.7)	896 (14.9)
<i>Computer services</i>	41 (2.7)	114 (4.3)	215 (5.5)	361 (7.3)	618 (12.1)	750 (12.5)
<i>Information services</i>	6 (0.4)	12 (0.5)	18 (0.5)	26 (0.5)	42 (0.8)	48 (0.8)
- Other business services	325 (21.8)	528 (20.1)	819 (20.9)	1.096 (22.2)	1.423 (27.8)	1.596 (26.6)
<i>Research and development services</i>	32 (2.1)	65 (2.5)	102 (2.6)	152 (3.1)	202 (3.9)	218 (3.6)
<i>Professional and management consulting services</i>	123 (8.2)	167 (6.3)	293 (7.5)	407 (8.3)	612 (11.9)	700 (11.7)
<i>Technical, trade-related, and other business services</i>	171 (11.5)	296 (11.2)	424 (11.9)	537 (10.9)	610 (10.9)	678 (11.3)
- Personal, cultural, and recreational services	14 (0.9)	35 (1.3)	52 (1.3)	69 (1.4)	87 (1.7)	103 (1.7)

Note: Values in the table are in US dollars (billion dollars) at current prices. Values in parentheses show the percentage shares of various services trade in world services trade. The sum of the subcomponents may not equal the total trade values due to rounding or missing component identification.

Source: WTO (2023). <https://stats.wto.org/>

Although services trade reached a noteworthy value, further enhancement has been expected given its growth potential. The necessity of physical contact between suppliers and customers, which is primarily needed to provide service provision, is probably the most important reason why service trade had not realized the expected performance. From this perspective, communication costs are quite a matter for the performance of international services trade. In this point, the invention of the Internet paved the way for services trade developments by functioning as a medium of exchange that overcomes such obstacles for any type of service (Freund and Weinhold, 2002). Bennett (1997) defines the Internet as a voluntary interconnected collection of computer networks, by which people and organizations freely and directly communicate with the world without any restrictions related to time and/or distance. This path-breaking international communication medium has come together suppliers and customers throughout the world easily and cheaply. In this way, in particular, suppliers may introduce their products to all potential customers by giving place to some information regarding themselves, product features, purchasing terms, and so on, as well as they may give reaction right after any offers from distant markets.

Gnangnon (2020) explains the bridge between the Internet and services export performance by emphasizing innovation. Accordingly, access to the Internet provides the required knowledge to related people regarding clients, suppliers, and competing firms, and any ideas as well as help to trading firms by furnishing information about customer taste and preferences and facilitating the identification of market opportunities for new products and services. Moreover, it helps to alleviate the risk with regard to the uncertainty of future demand preferences of customers to develop new products and services by taking feedback from customers. Access to the Internet, on the one side, improves the communication conditions with firms' suppliers, letting to learn more knowledge concerning firms' needs and technological opportunities; on the other side, it paves the way for the firms' decision-making. Last but not least, thanks to the Internet, small firms may benefit from knowledge spillovers of larger firms, and utilize them for more services production and trade.

The number of individuals using the Internet has been increasing continuously since it was invented. While 1.27% of the world population in the 1990s used the Internet, this rate was at 15.4% in the first decades of the 2000s. In the years of 2010s, on average, approximately 40% of the total population utilized the Internet around the world. This rate was 63.1% for 2021. Most economies, particularly developed ones, have been on the way to the transformation of

their economic structures from industrial activities to service activities because the service sector, which was, in nature, long time taken as a non-tradeable one into consideration, is anymore among the tradeable sectors thanks to the primary rapid improvements in the Internet. This development process gave rise to empirical research considering impact of the Internet on services trade performance. In this context, this study empirically revisits the nexus between the Internet and services trade with a broad range of country data over the period 1995-2019. The study is ongoing with a literature review of present studies, which is followed by the empirical part of the study including data, model, analysis, and results. The study comes to an end with the conclusion part.

2. Literature Review

A wide range of empirical studies have dealt with primary determinants of international services trade. While some of these studies have analyzed the data of only one country, i.e., time series analysis, other ones have taken panel data into consideration in their analysis procedure. Among time series studies, Freund and Weinhold (2002) analyzed the trade data of the United States from 1990 through 1994 from not only the export window but also the import window. Overall results of the study showed a positive association between internet penetration and service exports; in more detail, a 10% increase in internet penetration in partner countries gives rise to a 1.7% increase in service exports and a 1.1% increase in service imports of the United States. Utilized the data from 2000 to 2002 from the United Kingdom, Kneller and Timmis (2016) found a causality relationship between the Internet and trade in business services, but no evidence of the causality between the Internet and trade in overall services. In another study, Sahoo (2018) focused on the impact of the real exchange rate on India's service exports over the period 1975-2015 employing linear and non-linear autoregressive distributed lag (ARDL) models. The study concluded that 1% currency appreciation brings about a 0.01% decrease in India's service exports in the long run, albeit a significant effect is not found in the short run. Moreover, the impact of a couple of supply and demand factors such as foreign direct investments, financial development, globalization, and total world demand on the service exports far outweigh the price effects. In a similar study, Malik and Velan (2020) questioned the determinants of information technology software and service exports for India from 1980 to 2017 through the ARDL cointegration technique. The finding of the study referred to the positive contribution of external demand, human capital, and trade openness on that export flows; on the contrary, an appreciation in real effective exchange rate leads to a reducing tendency in that export flows. As to the investment in information technology, they are not

turned out to be a significant effect on information technology software and service exports in India.

As the internet has begun to come into peoples' life in the early 1990s, it has been mostly subject to empirical studies in the form of panel data analysis. In addition to these panel data studies, a cross-section study was conducted by Clarke (2002) who employed 1999 data from low- and middle-income economies in Eastern Europe and Central Asia. The study got evidence that enterprises with access to the Internet export more than similar ones without the Internet, and industrial and service enterprises made use of the Internet to a similar degree. Hinson and Adjasi (2009) scrutinized the nexus between the Internet and trade in goods and services in 43 African countries over the period 1996-2006, employing Swamy-Arora random effects and maximum likelihood estimates random effects. In this study, a positive relationship between Internet use and exports was detected; to be more precise, an 1% increase in Internet use causes a 2.2% increase in exports. Handled the panel data for 151 countries over the period 1990-2006, Choi (2010) empirically investigated the impact of internet usage on service trade by employing different estimators like pooled ordinary least squares, fixed effects, and panel generalized method of moments (GMM). According to the results, a 100% increase in the number of internet users gives rise to a 2-4% increase in service trade by especially facilitating required procedures. Utilizing 3-year (2002-2004) annual bilateral panel data from 35 exporting of which 7 consist of Central and Eastern European countries and 9 importing Western countries, Kandilov and Grennes (2010) focused on the impact of geographical conditions on bilateral service exports by using gravity model procedure. The results of the study predominantly demonstrated the changing impact of physical distance between country pairs on service exports depending upon the type of service. Accordingly, the distance between country pairs matters for construction type of service trade by contrast with insignificance for computer-related services. Additionally, the study highlighted the notable role of a high degree of institutional quality for more service exports in most types of services.

Liu and Nath (2013) analyzed the impact of Information, Communications, and Technology (ICT) on trade in goods and services of 40 Emerging Market Economies from 1995 to 2010 using the fixed effects model and concluded that Internet subscriptions and Internet hosts are strongly positively associated with both exports and imports of Emerging Market economies. Employing the GMM approach and panel data from 2000 to 2013 from 49 countries, Nath and Liu (2017) investigated the impact of ICT developments on exports, imports, and total trade in services that is separated into 10 sub-components. According to the

results, ICT positively contributes to international service trade in seven service items. Among these, financial and business services are significantly affected by ITC development in both exports and imports. Its positive impact only on exports is detected in transportation services, and the impact only on imports is observed in insurance services, royalty and license fees, telecommunication services, and travel. As to total service trade, six sub-components of services are promoted by ICT developments.

Utilized the panel data from 1995 to 2014 of 131 countries, Gnangnon (2020) empirically examined the nexus between Internet access and service export diversification via the two-step system GMM technic and inferred that Internet access is positively related to service export diversification. The encouraging role of the Internet on service export diversification is affirmed for developed, developing, and least developed countries as well as all samples. Besides, the study detected that the association between Internet access and service export diversification depends on the level of innovation, merchandise export growth, export product concentration, and the size of foreign direct investment inflows. Sun (2021) analyzed the data over the 1997-2014 period for a broad country sets to detect the impact of the development of the Internet on the share of small and medium-sized enterprises in total exports. The results of the study referred to the negative and significant impact of the development of the Internet on the export share of small and medium-sized enterprises. Moving from a different approach, Yi et al. (2022) analyzed the role of the degree of ICT market openness on digital service exports via the gravity model using industry-level panel data over 2007-2019 from 50 countries. According to the results, higher ICT market openness in not only exporting countries but also importing ones turns out to bring about more digital service exports, yet its impacts on exporting and importing countries are different. While exporting countries can boost their digital service exports through more fair competition, importing ones can get notable success in an increase of digital service exports by alleviating or removing access restrictions to ICT.

3. Empirical Setting: Econometric Model, Data, and Analysis Results

The study is in search of the finding empirical proof mainly in which direction and to what extent the Internet affects international trade in services. For this intention, the following econometric models are constructed on the base of existing empirical literature.

$$\ln \text{SEREXP}_{i,t} = \alpha_0 + \alpha_1 \ln \text{INT}_{i,t} + \alpha_2 \ln \text{GDPFR}_{i,t} + \alpha_3 \ln \text{FD}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

$$\ln \text{SERIMP}_{i,t} = \beta_0 + \beta_1 \ln \text{INT}_{i,t} + \beta_2 \ln \text{GDP}_{i,t} + \beta_3 \ln \text{FD}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (2)$$

In Equations 1 and 2, sub-indexes i and t represent the cross-section (41) and time dimensions (25), respectively. While $\ln$ denotes the natural logarithmic operator, α and β are the parameter coefficients to be estimated. On the other hand, because of the panel data's nature, unobserved cross-section-specific effects (μ_i) and time-specific effects (λ_t) are considered as possible impact factors. The rest of the random errors are modeled into ($\varepsilon_{i,t}$).

In Equations 1 and 2, dependent variables SEREXP and SERIMP represent the commercial service exports and imports, respectively. These data are in current US dollars. Commercial service exports (imports) are total service exports (imports) minus exports (imports) of government services not included elsewhere. The main explanatory variable is the Internet (INT), which can be used through some devices like a computer, mobile phone, personal digital assistant, games machine, and digital TV, which is represented by individuals the using Internet as a percentage of the total population. Internet users are individuals who have used the Internet (from any location) in the last 3 months. One of the explanatory variables shows the GDP of the importer country in the imports model. In the exports model, GDPFR indicates the GDP of the rest of the world, which is computed by the GDP of the world minus the GDP of the home country. These variables are added to models to control the foreign demand and in current US dollars. The financial development (FD) variable is represented by the financial development index, which shows how financial institutions and markets have developed in terms of access, depth, and efficiency. This index, which takes values between 0 and 1, consists of two sub-components, the financial institutions index and the financial markets index. Both sub-component indices include financial access, depth, and efficiency indices. While the data on the financial development index were obtained from the Financial Development Index database of the International Monetary Fund (IMF-FDI, 2023), all other variables were obtained from the World Bank's World Development Indicators (WB-WDI, 2023) database.

The study covers the data from 1995 to 2019 for 41 countries¹⁴ which have an important share of trade in services all over the world. These countries composed 67% (62%) of total commercial service exports (imports), on average, in the study period. The sample of the study is determined by considering data availability for all the variables. The means of service exports and imports are almost 55 billion and 48 billion dollars in the study period. On average, 43%

¹⁴ Albania, Brazil, Bulgaria, Canada, Colombia, Costa Rica, Cyprus, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Israel, Korea (Rep), Kuwait, Malaysia, Mexico, Netherlands, Norway, Panama, Peru, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Türkiye, the United Kingdom, and the United States.

of the residents in these 41 countries use the Internet in the study period. Kuwait, Iceland, and Denmark rank as the top three in terms of individuals using the Internet with shares of 99.5%, 99.0%, and 98.1% in total population in 2019, respectively. On the contrary, being a famous country with software expertise, India is located at the last of the list with a share of 41% of the total population in the same year, because of its huge population. The means of GDP and financial development index of countries in the sample are 891 billion dollars and 0.53, respectively, in the same period.

The study estimates Equations 1 and 2 by following the panel data analysis procedure. In the panel data analysis procedure, it matters to detect whether the model is exposed to autocorrelation, heteroscedasticity, and cross-section dependency for attaining robust and reliable empirical results. Hence, here a robust estimator developed by Driscoll and Kraay (1998) for these three concerns is utilized. Driscoll and Kraay (1998) proved that even the presence of a modest cross-section dependency may bring out significantly biased standard errors when the number of the cross-section is sufficiently large and come up with these concerns by generating consistent standard errors. Herewith, the study employs the robust standard errors of Driscoll and Kraay (1998) in the estimation process in both fixed effects and random effects regressions and presents the results in Table 2.

Table 2. Estimation Results of the Service Exports and Imports Models

<i>Predictors</i>	<i>Estimated coefficients</i>			
	<i>Fixed Effects Regression</i>		<i>Random Effects Regression</i>	
	SEREXP	SERIMP	SEREXP	SERIMP
<i>INT</i>	0.057* [0.013]	0.041* [0.009]	0.049* [0.013]	0.053* [0.008]
<i>GDP</i>	--	0.948* [0.033]	--	0.888* [0.032]
<i>GDPFR</i>	1.251* [0.606]	--	1.213* [0.071]	--
<i>FD</i>	0.377* [0.086]	0.305* [0.086]	0.616* [0.102]	0.347* [0.079]
<i>Cons.</i>	-15.744* [1.878]	-1.143 [0.869]	-14.325* [2.102]	0.396 [0.884]
<i>F Test</i>	686.66*	1983.91*	--	--
<i>Wald X²</i>	--	--	1847.68*	4443.52*
<i>R²</i>	0.794	0.856	0.408	0.891
<i>No. of obs.</i>	1025			

Note: * indicates the statistical significance at 1%. Robust standard errors are in [brackets].

Estimation results shown in Table 2 coincide with theoretical expectations wholly. The findings of the F-test and Wald X² test confirm the significance of the models. The models are

estimated in two different specifications, i.e., fixed effects and random effects regressions, to see the consistency of the findings. The internet is found to be an encouraging factor of service exports and imports in both specifications, albeit its coefficients vary to some degree among specifications. Accordingly, a 1% increase in the number of Internet users leads to 0.06% and 0.04% increases in service exports and imports, respectively, in fixed effects specification. These positive coefficients are found as 0.05% and 0.05% in random effects regression. From these coefficients, it is stated that the Internet has no far more different impacts on service exports and imports. The demand factor is the most important determinant in not only service exports but also imports. Accordingly, a 1% increase in the GDP of the rest of the world gives rise to 1.25% and 1.21% increases in service exports in fixed effects and random effects specifications, respectively. Similarly, a 1% increase in the GDP of the countries in the sample of the study causes a 0.95% and 0.88% increase in service imports in fixed effects and random effects specifications, respectively. Lastly, financial development proves its positive effect on both service exports and imports. The findings from fixed effects regression refer to 0.37% and 0.31% increases in service exports and imports, respectively, owing to improving financial development at the rate of 1%. Again, service exports and imports increased by 0.31% and 0.35% due to improving financial development at the rate of 1%.

4. Conclusion

International trade in services matters for the countries as much as merchandise trade in recent years. Some countries around the world focus on particularly trade in services and aim to increase export volume in services. In this way, the principal issue which should be addressed is fixed costs with regard to cross-border trade, which most likely matter more in services trade than merchandise trade given the services are non-tradable sectors in nature. Therefore, decreases in the costs that happened during trade may most likely have an increasing impact on service trade. At this point, the invention of the Internet may be accepted as a significant improvement since it is a medium that facilitates communication from many views between countries. From this intuitional approach, this study empirically investigates the impact of the Internet on trade in services using panel data from 41 countries over the period 1995-2019.

The findings indicate a positive association between the Internet and trade in services. This result is valid both service exports and imports. Demand factors are significantly found to be supportive factors for service trade. Additionally, financial development matters for further service exports and imports since it positively and significantly affects them. Overall results refer that an increase in the number of Internet users would bring about more international

service trade through principally its reducing impact on fixed costs such as searching, transaction, transportation, and communication concerning cross-border trade. Providing more access to the Internet, therefore, would help to increase the exports and imports of services.

References

- Bennett, R. (1997). Experiences of Web site use and perceptions of export barriers among UK businesses. *International Marketing Review*, 14(5), 324-44.
- Choi, C. (2010). The effect of the Internet on service trade. *Economics Letters*, 109(2), 102-104.
- Clarke, G. R. (2002). Does internet connectivity affect export performance? Evidence from the transition economies (No. 2002/74). WIDER Discussion Paper.
- Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549-560.
- Freund, C., & Weinhold, D. (2002). The Internet and international trade in services. *American Economic Review*, 92(2), 236-240.
- Gnangnon, S. K. (2020). Effect of the internet on services export diversification. *Journal of Economic Integration*, 35(3), 519-558.
- Hinson, R. E., & Adjasi, C. K. (2009). The Internet and export: Some cross-country evidence from selected African countries. *Journal of Internet Commerce*, 8(3-4), 309-324.
- IMF-FDI (2023). <https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B&sId=1481126573525>
- Kandilov, I. T., & Grennes, T. (2010). The determinants of service exports from Central and Eastern Europe. *Economics of Transition*, 18(4), 763-794.
- Kneller, R., & Timmis, J. (2016). Ict and exporting: The effects of broadband on the extensive margin of business service exports. *Review of International Economics*, 24(4), 757-796.
- Liu, L., & Nath, H. K. (2013). Information and communications technology and trade in emerging market economies. *Emerging Markets Finance and Trade*, 49(6), 67-87.
- Malik, M. H., & Velan, N. (2020). An analysis of IT software and service exports from India. *International Trade, Politics and Development*, 4(1), 3-25.
- Nath, H. K., & Liu, L. (2017). Information and communications technology (ICT) and services trade. *Information Economics and Policy*, 41, 81-87.
- Sahoo, M. (2018). Exchange rate and service exports from India: A nonlinear ARDL analysis. *Economics Bulletin*, 38(2), 1090-1101.

Sun, M. (2021). The internet and SME participation in exports. *Information Economics and Policy*, 57, 1-15.

World Bank- World Development Indicators (WB-WDI, 2023).
<https://databank.worldbank.org/source/world-development-indicators>

World Trade Organization (WTO, 2023). <https://stats.wto.org/>

Intra- Industry Trade Analysis of Türkiye's Foreign Trade with Austria

Ertan Beceren¹⁵, Seçkin Kabak¹⁶

Abstract

In today's world, new foreign trade theories have emerged that traditional foreign trade theories are insufficient to explain. These foreign trade theories have emerged since the 1960s. International trade, which allows an economy to export and import a product from the same industry, is called Intra-Industry trade. Intra-Industry trade has gained importance with the differentiation of consumption habits together with Post-Fordist production and has been the subject of research. In this direction, the analysis of the Intra-Industry trade in the foreign trade of Türkiye and Austria will be carried out. Grubel-Lloyd index will be use in the analysis. In the light of the data between 2003 and 2022, the sectors of leather and leather products, knitted clothing, marble and natural stone, iron or steel items, various items made of base metal, wood and wooden items were examined. It has been concluded that there is a high level of IIT between the two countries in the marble and natural stone and iron or steel goods sectors.

Keywords: Foreign Trade, Intra-Industry Trade, Türkiye, Austria.

JEL Codes: A1, F0, F1

1) Theoretical Framework

Foreign trade is the entire trade of goods, services and production factors between independent economies (Karluk, 2013: 1). Foreign trade theories are divided into two parts: classical or traditional and post-1960 or new foreign trade theories (Akkoyunlu, 1996: 71).

While Mercantilism, Physiocracy, Classical Economic View and Heckscher-Ohlin (HO) Theory are classified as traditional foreign trade theories, Skilled Labor, Technology Gap, Similarity in Preferences, Product Cycles, Economies of Scale, Intra-Industry Trade (IIT), Gravity Model and Product Differentiation theories are classified as new foreign trade theories after 1960 (Kabak, 2018: 27).

Both exporting and importing goods in several industries of a country is called IIT (Grubel and Lloyd, 1971: 494). Another definition is "the simultaneous import and export of goods in the same industry or product group at a given time/period" (Krugman and Obstfeld 2000: 139).

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Measurement of IIT has become necessary in order to determine the adjustment costs of trade liberalization efforts and economic integration initiatives. With the establishment of the European Economic Community in the 1960s, the analysis of the trade among the member countries of the community revealed the importance of IIT (Çalışkan, 2010: 4).

Table 1: IIT Indices in the Literature

Static Indices	Semi-Dynamic Indices	Dynamic Indices
Balassa Index, Grubel and Lloyd Index, Aquino Index, Loertscher and Wolter Index, Balassa and Bauwens Index, Rajan Index and Nilsson Index	Differences between Grubel and Lloyd Indices and Greenaway-Hine-Milner-Elliott Index	Hamilton-Kniest Index, Brühlhart A, B, C and Dixon-Menon Indices

Source: Narin, 2002: 52-78, Şimşek, 2008: 143-193 and Çalışkan, 2009: 37-70.

In the literature, IIT indices are analyzed in three categories: static, semi-dynamic and dynamic indices. Since the most widely used index in the literature among these indices is the Grubel-Lloyd (G-L) index, the G-L index is preferred in this study. G-L (1975) developed the following index to measure IIT;

$$Bi = \frac{(Xi+Mi)-|Xi-Mi|}{Xi+Mi} \quad (1)$$

In Equation 1; Bi denotes the IIT value, Xi denotes a given country's exports in industry i, Mi denotes a given country's imports in industry i, and (Xi + Mi) denotes the total trade volume. EIT for an industry or group of goods is calculated as a percentage. EIT index takes values between $0 \leq Bt \leq 100$. As the value of Bt approaches 100, the share of EIT increases. If Bt = 0, Interindustry trade is said to be valid. If Bt = 100, full EIT is interpreted as valid.

2) Overview of Economic Relations between Türkiye and Austria

When we examine Austria's foreign trade data for 2021, the total exports amounted to € 165,476 million and the total imports amounted to € 177,977 million. It is understood that the amount of exports in question is € 1,493 million and the amount of imports is € million. According to these data, Türkiye's trade balance with Austria has a surplus of €745 million. According to these data, it is understood that Türkiye is a net exporter for the Austrian economy. Moreover, between 2002 and 2021, Austria's investments in Türkiye are worth approximately \$11 billion (Oesterreichische Nationalbank, 2023).

Table 2: Türkiye's Foreign Trade with Austria (€ Million): 2000-2021

	Türkiye's Imports from Austria	Türkiye's Exports to Austria	Foreign Trade Volume	Foreign Trade Balance (for Türkiye)
2000	481	445	926	-36
2001	419	521	940	102
2002	554	613	1.167	59
2003	704	699	1.403	-5
2004	791	744	1.535	-47
2005	738	809	1.547	71
2006	844	799	1.643	-45
2007	944	861	1.805	-83
2008	966	910	1.876	-56
2009	761	796	1.557	35
2010	1.064	881	1.945	-183
2011	1.249	1.042	2.291	-207
2012	1.225	1.092	2.317	-133
2013	1.244	1.198	2.442	-46
2014	1.207	1.285	2.492	78
2015	1.403	1.462	2.865	59
2016	1.324	1.554	2.878	230
2017	1.311	1.542	2.853	231
2018	1.321	1.673	2.994	352

2019	1.158	1.762	2.920	604
2020	1.254	1.761	3.015	507
2021	1.493	2.238	3.731	745

Source: Statistik Austria, 2023.

While the volume of foreign trade between the two countries was €926 million in 2000, it gradually increased between 2000 and 2021 and reached €3,731 million in 2021. According to the information in Table 2, the foreign trade balance was in deficit against Türkiye between 2000 and 2013, except for the years 2001 and 2002. Between 2013 and 2021, however, the trade balance was in Türkiye's favor with a surplus.

Table 4: Top 10 Product Groups in Türkiye's Exports to Austria (Million €)

N o	SITC	Item Name	2021	2022	%
1	845	Other clothing, knitted or not	28.780.006	27.907.197	-3,0
2	684	Aluminum and aluminum rod, profile, wire, sheet, strip, pipe, etc.	13.309.100	25.670.294	92,9
3	222	Oil seeds and fruits (crushed or not)	8.824.610	21.402.502	142,5
4	842	Women's/girls' non-knitted clothing and accessories	11.270.648	15.065.669	33,7
5	781	Motorized passenger vehicles (passenger cars, etc.)	8.470.947	13.284.943	56,8
6	658	Other ready-made articles and sets of textile materials	20.142.499	13.197.000	-34,5
7	782	Motor vehicles for transporting goods	10.372.092	12.321.442	18,8
8	897	Jewelry items made of precious, semi-precious and plated metals	758.795	11.133.878	1367,3
9	844	Knitted clothing for women/girls	8.229.600	10.712.048	30,2
10	841	Men's/boys' non-knitted clothing and accessories	8.005.713	10.452.225	30,6

Source: Statistik Austria, 2023.

According to the data in Table 4, there are the top ten product groups in Türkiye's exports to Austria. Clothing ranks first and amounted to approximately €28 million in 2022. Exports of aluminum and aluminum rods, profiles, wires, sheets, strips, pipes, etc. ranked second and

amounted to approximately € 26 million in 2022. Oil seeds and fruits, which ranked third, amounted to €21.4 million in 2022.

Table 5 shows the top ten products in Türkiye's imports from Austria. Other artificial fibers and residues ranked first and amounted to over € 21 million. Flat rolled products of stainless or unalloyed steel ranked second with a value of €17.4 million. Motorized passenger vehicles ranked third and amounted to around €15.5 million.

Table 5: Top 10 Product Groups in Türkiye's Imports from Austria (Million €)

No	SITC	Item Name	2021	2022	%
1	267	Other man-made fibers and residues	13.646.354	21.211.986	55,4
2	675	Flat rolled products of stainless or non-alloy steel	10.979.006	17.412.773	58,6
3	781	Motorized passenger vehicles (passenger cars, etc.)	18.388.018	15.448.666	-16,0
4	676	Wire rods, bars and profiles of iron or steel (alloyed, unalloyed)	7.925.905	11.069.453	39,7
5	571	Ethylene polymers (first forms)	3.354.841	9.919.025	195,7
6	684	Aluminum and aluminum bars, profiles, wires, wires, sheets, strips, pipes, etc.	6.117.878	9.788.804	60,0
7	699	Other common metals (locks, chains, springs, zippers, sewing, embroidery tools, etc.)	8.153.932	8.444.336	3,6
8	111	Non-alcoholic drinks	6.900.870	6.945.545	0,6
9	728	Other machinery and equipment	13.199.489	6.676.106	-49,4
10	575	Polymers of propylene and other olefins (first forms)	6.528.620	6.163.196	-5,6

Source: Statistik Austria, 2023.

According to 2022 data, Türkiye ranks 20th in the ranking of Austria's exporting countries, while it ranks 17th in Austria's imports (Türkiye Exporters Assembly, 2023).

3) Literature Review

Balassa (1963) analyzed the foreign trade of industrial goods in the European Communities (EC) countries. As a result of the analysis, he argued that foreign trade in EC countries is realized within commodity groups rather than between commodity groups.

Grubel-Lloyd (1975) measured IIT with the method they developed for 10 developed countries with data covering the period 1959-1967. As a result of the research, they found that 71% of the trade structure between the European Common Market countries consists of IIT.

Küçükahmetoğlu (2001) calculated the IIT analysis of Türkiye with the world economies for the period 1989-1998 with the Grubel-Llyod index. As a result of the study, the author found that ECO between Türkiye and the world countries is on an upward trend. The author also stated that Türkiye's IIT level is low compared to developed countries and close to developing countries.

Kösekahyaoğlu (2002) analyzed IIT for Türkiye and 12 EU member states for the periods 1975-1980 and 1980-1990. In the study, it was found that IIT values increased both in the values obtained from static (Grubel-Llyod) measures and in the values obtained from dynamic measures. The author also found that trade liberalization encourages IIT.

Deviren and Karataş (2007) analyzed the structure of trade between Türkiye and the People's Republic of China. The authors analyzed the products entering the sectors in which the EIT index has a value of 0.50 and above in the SITC 3 digit level for the period 1995-2005 and found that the trade between Türkiye and the People's Republic of China exhibits an inter-industry trade structure.

Erün (2010) analyzed the total and sub-sectors of the food and livestock sector between Türkiye and EU countries for the period 1995-2009. According to the results of the analysis, he found that there is a high level of IIT structure between Türkiye and EU countries, but when he analyzed the countries individually, he found that there is a low quality vertical IIT.

Şentürk and Kösekahyaoğlu (2015) investigated Türkiye's foreign trade for the period 1990-2013 using SITC 3-digit data and Grubel-Lloyd index. As a result of the study, they found that Türkiye's manufacturing industry IIT values gradually increased over the period analyzed and that IIT has high values in low or medium technology goods.

Vidya and Prabheesh (2019) analyzed the determinants of IIT in India's trade with Indonesia with data from 1995-2017. Using Autoregressive Distributed Lag model, the authors find that trade imbalances, inequality in demand structure and human capital endowment between the two countries reduce bilateral IIT, while foreign direct investment and trade openness increase IIT.

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Aggarwal and Chakraborty (2022) conducted a panel data analysis of India's IIT patterns and determinants in seven sectors for the period 2001-2015 with data from 25 major trading partners. They find that vertical intra-industry trade, productivity, trade facilitation reforms, trade agreements and product differentiation dominate India's IIT pattern at the sectoral level.

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Şentürk (2023) calculated the IIT with the Grubel-Lloyd index using the data of 9 selected EU countries and Türkiye for the period 1996-2019. The author analyzed the levels of foreign direct investment net inflows and net outflows with Westerlund cointegration and Dumitrescu-Hurlin panel causality analysis. As a result of the analysis, it is found that there is a unidirectional causality from foreign direct investment net inflows to IIT, while there is a bidirectional causality relationship between foreign direct investment net outflows and IIT.

4) Findings

According to the results in Table 6, in light of the available data on Türkiye's trade with Austria in the period 2003-2022, the IIT analysis of leather and leather products, knitted garments, marble and natural stone, iron or steel articles, miscellaneous articles of common metal, wood and wood articles sectors are included.

In the leather and leather products sector, while it was characterized by IIT in 2003-2006, this index gradually declined in the following years and tended to show Inter-Industry Trade (IIT) characteristics. In the knitted garment sector, trade between Türkiye and Austria in the period analyzed is almost fully inter-industry trade.

Table 6: IIT Analysis of Selected Sectors in Türkiye and Austria Trade

Years	Leather and Leather Products	Knitted Clothing	Marble and Natural Stone	Iron or Steel Products	Various Articles of Common Metal	Wood and Wooden Goods
2003	58,15611	0,921981	97,80277	92,53654	49,62681	4,592929
2004	47,46778	1,484805	96,8601	91,33878	42,10445	6,051186
2005	68,17563	1,198586	95,38911	92,0058	31,09387	12,62185
2006	93,27305	0,924808	95,2099	85,11714	45,14336	12,96795
2007	18,16991	1,610718	96,19767	86,35846	34,32913	14,4097
2008	7,557578	0,894623	94,19798	86,5332	39,22665	14,92232
2009	5,27714	1,346871	96,15369	90,81508	30,49518	11,98111
2010	6,159494	0,679845	90,13171	90,36889	20,42425	11,88759
2011	5,668636	0,870636	93,36904	87,41588	21,89016	14,69198
2012	3,337386	1,006212	95,04549	90,9016	23,29761	4,015001
2013	3,084873	1,172476	96,83552	97,41722	19,07909	2,920446
2014	4,370101	1,70412	95,51764	93,21165	15,38999	4,113386
2015	2,129208	0,931003	94,08708	88,16494	14,81252	7,161787
2016	1,613851	0,717706	99,63553	85,47935	19,82614	6,085455
2017	2,773275	2,000259	97,77703	90,93743	22,04442	9,759821
2018	0,979925	0,634968	95,40894	86,65171	22,03513	16,45491
2019	10,09337	0,432488	99,52995	98,67755	26,2067	41,28635
2020	3,550904	0,844235	99,41868	97,39217	29,84734	25,53349
2021	3,02116	1,34169	92,40891	83,33456	32,32698	35,36136
2022	6,755081	1,050312	93,07877	70,36304	35,68635	29,97266

Source: Data were obtained from Refinitiv web page and calculations were made by the authors (2023, September 20)

According to the G-L index calculations, trade between the two countries in the marble and natural stone sector has taken values of 90 and above in all years in the analyzed period and shows a high level of IIT feature. When we look at the iron or steel goods sector, it is understood that it shows similar characteristics to the marble and natural stone sector.

Although there is no IIT in the miscellaneous articles of common metal sector, the index has shown an upward trend in some years. As a result of the calculation of wood and wooden goods, it can be stated that it tends to show IIT.

Conclusion

This study analyzes the IIT phenomenon of Türkiye's trade with Austria, taking into account the increasing importance of IIT in today's world and the stage of Türkiye's trade relations with Austria. In the light of the data obtained, the period between 2003 and 2022 was analyzed in the sectors of leather and leather products, knitted garments, marble and natural stone, iron or

steel goods, various articles of common metal, wood and wood goods, which are subject to the foreign trade of the two countries.

Since the most widely used index in the literature is the Grubel-Lloyd (G-L) index, the G-L index is preferred in this study. According to the calculated G-L results, it was found that the leather and leather products and knitted garments sectors showed almost full EIT characteristics in the analyzed period, while the trade in wood and wooden goods tended to show inter-industry trade. Marble and natural stone and iron and steel goods sectors were found to have a high level of inter-industry trade.

References

- Aggarwal, S. and Chakraborty, D. (2022). Which Factors Influence India ' s Intra-Industry Trade ? Empirical Findings for Select Sectors. *Sage Journals*, 23(3), 729-755. doi:10.1177/0972150919868343.
- Akkoyunlu, A. S. (1996). Yeni Dış Ticaret Teorileri, *Ekonomik Yaklaşım*, 7(21), 71-99.
- Balassa, B. (1963). European Integration: Problems and Issues, *The American Economic Review*, 53(2), 175-184.
- Çalışkan, Ö. (2009). *Türkiye- AB Ticaretinde EİT ve Gümrük Birliği Sonrası Gelişmeler*, Gazi University Institute of Social Sciences, Unpublished Master's Thesis.
- Deviren, N. V., and Karataş, M. (2007). Türkiye ile Çin Halk Cumhuriyeti Arasındaki Endüstri-İçi Ticaret. *İktisat İşletme ve Finans*, 22(250), 16-32.
- Erün, G. (2010). Türkiye ile AB, Gıda ve Canlı Hayvan Sektörü Dış Ticaretinde Endüstri İçi Ticaret Analizi. *Ekonomi Bilimleri Dergisi*, 2(1), 71-78.
- Grubel, H. G. and Lloyd, P. J. (1975). *Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products*. London: MacMillan Pres.
- Grubel, H. G. and Lloyd, P. J. (1971). The Empirical Measurement of Intra-Industry Trade. *The Economic Society of Australia, Economic Record*, 47(4), 494-517.
- Kabak, S. (2018). *Türkiye 'de Hizmet Sektörü Dış Ticaretinin Gelişimi: 2003-2016*. Süleyman Demirel University Institute of Social Sciences, Master's Thesis.
- Karluk, S. R., (2013), *Uluslararası Ekonomi Teori Politika*. İstanbul: Beta Basım Yayım Dağıtım.

- Kösekahyaoğlu, L. (2002). Does Trade Liberalisation Matter?: An Analysis of Intra-Industry Trade for Türkiye and the EU. *Marmara Journal of European Studies*, 10(1), 113–135.
- Krugman, P. R. and Obstfeld, M. (2000). *International Economics, Theory&Policy*, Fifth Edition, Boston: Pearson Addison Wesley.
- Küçükahmetoğlu, O. (2001). Endüstri İçi Ticaret ve Türkiye. *Marmara Journal of European Studies*, 9(2), 129–153.
- Narin, P. (2002). Endüstri-içi Ticaret ve İhracata Dayalı Sektörler Açısından Türkiye Uygulaması. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 4(1)
- Şimşek, N. (2008). *Türkiye'nin Endüstri İçi Dış Ticaretinin Analizi*, İstanbul: Beta Yayınları.
- Statistik Austria. (2023, October 7). <https://www.statistik.at/>.
- Şentürk, C. (2023). Seçilmiş AB Ülkeleri ve Türkiye’de Doğrudan Yabancı Yatırım ve Endüstri-İçi Ticaret: Dumitrescu-Hurlin Panel Nedensellik Analizi. *Avrasya Bilimler Akademisi Ekonometri, İstatistik ve Ampirik Ekonomi Dergisi*, 23, 13–24.
- Şentürk, C. and Kösekahyaoğlu, L. (2015). Türkiye’nin 1990-2013 Dönemi İçin Endstri İçi Ticaretinin Endeks Yöntemine Dayalı Analizi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 20(1), 169–198.
- Oesterreichische Nationalbank. (2023, October 9). <https://www.oenb.at/en/>.
- Refinitiv. (2023, September 20). <https://www.refinitiv.com/en>
- Türkiye Exporters Assembly. (2023, October 5). <https://tim.org.tr/en/default>.
- Vidya, C.T. and Prabheesh, K.P. (2019), Intra-Industry Trade Between India and Indonesia, *Bulltein of Monetary Economics and Banking*, 21(12th BMEB Call for Papers Special Issue), 511-530.

Design Patterns in software architecture a breakthrough in productivity

Tanvir Ahmed¹⁷

Abstract

Today main challenges to computer scientists and practitioners are the checking and locating of specific sequences of data of some pattern among raw data or a sequence of tokens. Unlike pattern recognition, the match has to be exact in the case of pattern matching. Software design patterns are used to solve the common occurring problems in a context. They are very commonly used in software architecture development from last two decades. The use of design patterns produce fast and high quality software products, thus the most of software designer are not know the exact situation where to fit it, if they know the exact implementation area and requirements they will be very beneficial in development process. The design pattern helps the team members to communicate with each other and also help to understand of their codes. A number of design patterns are available from last two decades that can help the engineers and developers in this domain. They have much importance in computing systems that are designed and implemented in past .In this paper, we discussed some history of design patterns, the patterns started from building architecture, after some time they become a part of software engineering and play a vital role in software architectural development, and the second section covered the current status of design patterns, Now day's design patterns are more comprehensive and expressive as compared to past, and at the last some future developments and new trends in design patterns are discussed. So the design research community, software developers and managers will be able to indicate where we were and where we will. Some future predictions also discussed for the help of researchers, developers and designers. Finally, we listed our observations for future research directions and guidelines for this discipline.

Keywords—Software patterns, pattern languages, object-oriented frameworks, software architecture, Software quality attributes, Transformational programming,

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1. INTRODUCTION

The software engineering became a discipline few decades back. Concepts and tools were got instantiated or borrowed from different fields such as electrical engineering, architect engineering, mathematic etc. Christopher Alexander [1] is called the fore father of patterns who introduced the reusable architectural proposals for producing good quality designs and their uses. He designed and personally built over 100 buildings, both as an architect and a general contractor. Alexander is regarded as the father of the pattern language movement. Actually his concepts in 90s got instantiated in the domain of software engineering. As other concepts like lexical rules and conventions of mathematics were used in languages [2].

The numerous advantages of using architectural patterns in software designs are being identified. They increase developers' efficiency, productivity, and speed through continued optimized development costs and refined planning [3]. There are many different types of enterprise architect design patterns you can tap into. In the mid-90s', the idea of patterns was adopted by object-oriented software developers. The solid research work in form of 23 design patterns was published in a book by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides [2] in 1994 and got famous in the community of software engineers as a Gang-of-Four. Catalogued 23 design patterns aimed at meeting some commonly-recurring object-oriented design needs. The book in 1994 proved to be the most popular to learn design patterns. Furthermore, it got a shorter name as "GoF Design Patterns". In current years, Gang-of-Four design patterns have grab the attention of researchers and they are now considered a highly regarded part of software engineering research and practice.

In object oriented design problems, design patterns are defined in form of relationships and responsibilities among them [4]. The main concept of design patterns is the documentation of software creation, semantics comprehension and future preservations. Moreover, since the design patterns get evaluated on the base of previous successful experience, therefore, the developers get facilitated to maintain and extend the process of software creation through applying already developed patterns and transformations [17]. The accumulated large volume of work by the researchers in AI based software creation context is being proved as the backbone to address the productivity issue. The provision of industry standard approaches to save time by making use of reusable components are becoming the correct solutions to evolve

robust and maintainable code [18]. Design patterns lead to rapid development, improve coding standards and debugging. Ownership cost also reduces.

To promote good software engineering practices, this article presents the relevant information regarding the software patterns. An attempt is made to help software developers and managers in their projects to understand the role of patterns to match the rapid growth of complex software. [5],[6],[7].

2. LITERATURE REVIEW

Initially patterns were introduced by Christopher Alexander in the building architecture and he represented his ideas in his book published by Oxford press USA in 1977 to save the efforts for reinventing the solutions of a specific problem [1], [2]. Major outcome from this book was that “Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice.” In 1987, Kent Beck and Ward Cunningham began experimenting with the idea of applying patterns to programming and presented their results at the OOPSLA conference that year. After that Gang-of-Four (Gang of Four, Gamma, Helms, Johnson and Vlissides), categorized 23 Design patterns in object-oriented design for the solution of commonly occurring problems.

Since 1994 design patterns have been use in software engineering they have been widely publicized by education curricula, conferences, seminars and books. People have come to the conclusion that these patterns are not silver bullet. Patterns are not the transformational rules which could be automatically applicable in most of the cases provided applicability conditions are verified. Novice developers’ cannot match the productivity with the expert designers. You become guru through experience and intelligence to select, instantiate and translate into form understandable in the documentation planned. There is no other sudden and magical formula to become expert. Certainly single-handedly solving the problem of software crisis is not yet reached. [Linda Rising 1998]. It should help novices to act as if they were—or almost as if they were—experts on modest-sized projects, without having to gain many years of experience [4]. Certain tried-and-true solutions to design problems can be (and have been) expressed as a set of principles, heuristics or patterns—named problem-solution formulas that codify exemplary design principles [8], [9], [10]. By teaching patterns, supports quick learning and skillful use of these fundamental object oriented design idioms [5].

Most of the documentation of design patterns is in the form of books or articles, written for the general developer audience. Backing for claims is given in hearsay form, with stories from the author's own experience [1], [2]. The focus of the present research is on experimental investigation of how to use design patterns affecting the maintainability of software. Increased maintainability, through both lower error rates and increased flexibility and adaptability to new circumstances, is one of the perceived advantages of design patterns. Academic research on this aspect is limited. Setting out a program of research into patterns, and performing several experiments explains several industrial case studies to support the research and literature developed [12], [13], [14]. Further case studies were conducted by several groups. The subjects of the studies are industrial systems of up to 30000 lines of the code (LOC), to address reengineering and construction concerns without realizing maintenance over extended periods [14], [15]. The studies are said to be exclusively beneficial, as the qualified use of patterns guarantee below-average error rates or maintenance effort. Of course, it is hard to know what would have happened if patterns had been used differently or not at all in the studied cases and replicated experiment [16]. The process is tested with patterns against "equivalent" designs to illuminate its usefulness. Other research on design patterns has focused on tools to support the use of patterns in the development process—either during design/coding, or reverse engineering. Reverse engineering tools have been created by several groups. Most existing tools have been tested on code sizes up to 10 000 LOC, and usually less (or not specified). Running times are usually not specified, so that it is hard to extrapolate. Commercial software often runs into millions of lines of code, and it is argued when the code is largest that the need for reverse engineering tools is greatest. This was one of the motivations for the research reported in where large-scale reverse engineering was needed to obtain the raw data for an evaluation of the effects of design pattern usage on error rates.

Now a day's software development process technology has matured and we are well-known that how to apply and documented these patterns in today development. Ironically, Gang-of-Four book have popularity in the software community so most of the software developers are unaware about the field strength and not know where to look up pattern publications that cover a wide range of software technologies other than the Gang-of-Four book [23], [24].

3. SOFTWARE DESIGN PATTERNS

There are 23 design patterns which can be classified in three categories of patterns [2]:-

- **Creational:** designed for class instantiation. They can be either class-creation patterns or object-creational patterns.
- **Structural:** designed with regard to a class's structure and composition to increase the functionality of the class(es) involved, without changing much of its composition.
- **Behavioral:** designed depending on how one class communicates with others.

These 23 design patterns are further focused in 7 areas that are considered the most influential or important as [4]:-

- **Singleton Design Pattern** : falls under the “creational” type, restricting object creation for a class to only one instance and providing global access to a global variable but some people call them anti-pattern because it locks up an object and restricts future flexibility.
- **Factory Method Design Pattern:** a “creation” design pattern, with it developers create objects with a common interface but allow a class defers instantiation to subclasses to promote loose coupling and code reuse. It is not appropriate for simple scenarios, where developers complicate processes in order to use a design pattern.
- **Facade Design Pattern:** is a “structural” design pattern to provide one interface (class) for access to a large body of code / various objects. A facade hides complexities of various sub-systems (often organized into a class) with a simple interface.
- **Strategy Design Pattern** : is a “behavioral” software design pattern that is sometimes known as a policy pattern where interchangeable algorithms are encapsulated together into a “family” with one of the algorithms being selected at runtime as needed.
- **Observer Design Pattern:** is “behavioral,” linking an object (subject) to dependents (observers) in a one-to-many pattern. When any of the observers change, the subject is notified. It is useful in any kind of event-driven programming.
- **Builder Design Pattern** : is “creational,” separating the object construction from the representation. This design pattern allows greater control over the design process (more a step-by-step), but it also decouples the representation to support multiple representations of

an object using the same base construction code (the Concrete Builder step). It executes in sequential steps calling only those steps that are necessary for each iteration of the object.

- **Adapter Design Pattern:** is a “wrapper” that converts one kind of interface into another existing kind of interface. It helps classes work together when they are incompatible, allowing code to work together.

The annual Pattern Languages of Programming Conference proceedings include many examples of domain-specific patterns.

Pattern Relationships

A design pattern provides a general reusable solution for the common problems that occur in software design. The pattern typically shows relationships and interactions between classes or objects. The idea is to speed up the development process by providing well-tested, proven development/design paradigms. Three pattern relationships types include:-

- **Patterns complement:** a pattern that provides alternate solutions to a problem that other patterns can't be handled. By this way we can make design result more balanced and complete
- **Pattern compounds:** these patterns return single decision as a response of a recurring problem that is identifiable and common.
- **Pattern sequences:** joining a well established predecessor patterns to generalize successive pattern.

Pattern Languages

For the grouping of specific software development domains the authors of pattern communities have been documenting the patterns in early 1995 especially in telecommunication systems. The aim of Pattern languages is to help and support to design and develop complexity and a variety of software in technical or application domain like communication middleware and e-commerce. Pattern languages also help us with domain-specific and pattern-oriented software development process. It stated in the first several Pattern Languages of Program Design books, earlier published patterns closely related to the stand-alone patterns and pattern collections. Even patterns did not exist in isolation. Pattern languages can be viewed as logical extrapolation for the pattern relationship. Many pattern languages are discussed and decompositions for pattern sequences and stand-alone patterns.

Design patterns are highly effective for commercial software development to improve productivity through efficient and qualitative techniques of software engineering, system design, and development. Patterns capture many of the best practices of software design, making them available to all software engineers. Representing the best of the conferences, these patterns provide effective, tested, and versatile software design solutions for solving real-world problems in a variety of domains. A wide range of topics, with patterns in the areas of object-oriented infrastructure, programming strategies, temporal patterns, security, domain-oriented patterns, human-computer interaction, reviewing, and software management are documented [4].

Layered Object Model (LayOM) provides language support for the explicit representation of design patterns in the programming language. LayOM is an extended object-oriented language in that it contains several components that are not part of the conventional object model, such as states, categories and layers. Layers are used to represent design patterns at the level of the programming language. LayOM is supported by a development environment that translates LayOM code into C++.

The design patterns found in the GOF book [4] are not exactly supported by a particular language. However, partially being supported by development languages today, for example in Java you really need a singleton but in Python you can do without it you write a module.

Domains and Technologies Documented by Patterns

Patterns support reuse of software architecture and design. Patterns capture the static and dynamic structures and collaborations of successful solutions to problems that arise when building applications in a particular domain. On the other hand, the frameworks support reuse of detailed design and code and integrate set of components that collaborate to provide a reusable architecture for a family of related applications. Together, design patterns and frameworks help to improve software

Quality and reduce development time. From the start There was a close relationship between Frameworks and patterns, so for the proof by the many framework examples GANG-OF-FOUR used to motivate patterns in their book [4], but latter by experience has shown that frameworks show has evolved, ideal descriptive tool for developers, high pattern density and understanding of frameworks. So after that patterns authors' community, mostly focused on emerging following domains:-

- ***Distributed computing.*** For the last few years Distributed computing becomes a popular area for design pattern researcher and authors. How to build a distributed software system with the help of present and general pattern languages. More than 250 patterns are to select an appropriate communication infrastructure and architecture.
- ***Language & domain-specific notations.*** Over the past decade, many programming styles have developed and emerged, domain-driven design, including aspect-oriented software development, generative programming and model-driven software development. Each programming style pattern distinguishes from other programming language pattern styles. So these are documented by their own style. Mostly patterns focus on programming language idioms, some examples are Smalltalk to Python and from C++ to C.
- ***Security:*** More concerns by growing software systems are in software system patterns considering more emphasis upon security related areas being confidential, authorization, authentication, and integrity.
- ***Embedded systems.*** Document patterns for addressing embedded system constraints without losing the benefits of abstraction because embedded system applications are rapidly growing in physical devices and system. These applications are connected to the physical environment, and that is to satisfy physical demands and limitations like physical size, consumption etc.
- ***Process and organizational structure.*** From past few decades, research community is trying to improve software development process and organizations with the help of patterns. For introducing pattern language, some current books deal with different types of software development processes, such as agile engineering, test-driven, domain-driven software development, software refactoring and distributed computing.
- ***Education.*** In software engineering design patterns, languages are used to convey knowledge and techniques. There are some websites and publications that also use for design patterns.

4. WHERE PATTERNS ARE NOW

Now day's use of design patterns to improve productivity at individual and projects level are more established and documented practices in software development. Stretched experience of research community in mining, documenting and applying patterns is being improved at each level. Patterns are used in universities curricular and many software projects' production. Moreover, current patterns are much experience as compared the

shape of designs that are represented in GANG-OF-FOUR book [4],[5],[6]. We expect developers will continually understand the core patterns, trends and pattern languages. Although by applying patterns many software get successes and there have also some failures due to misunderstanding of large part of a patterns. Mostly software developers do not know what are the pros and cons, what properties and purpose they have and what is the target audience of using them. The design patterns community is trying hard to understand the theories, associations, methodologies and pattern languages to help codify knowledge and effective application of software patterns. And with the passage of time software developer's community have a better grasp of patterns than before. Generally we can say the quality of published patterns is increased then the past. Today patterns, languages are more comprehensive, more expressive, readable and more reliable than the past.

Patterns future

Now days software developers are known that how to apply patterns in their domains that formulate a question that “what is the future of design patterns”? In literature review part we have a look on pattern literature and community that how they have worked since beginning. As all technologies and domains of software development are not yet addressed with the reference of patterns it may take decades to cover all patterns, so we are expecting more technology and domain specific patterns will be documented. we are expecting some domains and technologies that will be addressed in the future as follow [18], [19]. [20]:-

- ***Service-Oriented Architecture (SOA).*** SOA is not a new concept, but it has become typical and ascends to exhortation status in current years. SOA is a approach of organizing and developing distributed abilities that may be forbidden and owned by different organizations or groups. This approach builds upon many principles and technologies known from distributed computing and enterprise system inte-gration, and can accordingly draw from a broad variety of presented patterns and pattern languages, such as those documented in. Some SOA technologies, like business process modeling, service orchestration, and ultra-large-scale systems, are still unexplored, on the other hand, and are not yet covered by equivalent documented patterns.
- ***Quality of service (QoS) for commercial-off-the-shelf (COTS)-based distributed systems.*** To decrease or reduce development cycle-time and cost, such distributed systems are progressively more developed using several layers of COTS hardware,

operating systems, and middleware mechanism. It is difficult, but, to configure COTS-based systems that can concurrently gratify *multiple* QoS properties, such as timeliness, security *and* fault tolerance. As developers and integrators carry on to master the complications of given that end-to-end QoS assurances, we look forward to boost in documented patterns that assist others monitor, configure, and control COTS-based distributed systems that have a variety of mutually dependent QoS properties.

- **Mobile systems.** Wireless networks have become persistent and embedded computing devices are be-come ever smaller, lighter, and more competent. Similarly, from mobile systems we can access Internet services like on-line banking, browsing etc. Challenges rate is high in mobile system, however, such as managing low and variable bandwidth and power, adapting to common troubles in connectivity and, diverging protocols, service quality and maintaining cache uniformity crosswaysdetached network nodes. We expect that experienced mobile systems developers will document their expertise in pattern form to help meet the growing demand for best software development practices in this area.
- **Software architecture.** Regardless of boost in the number of documented pattern languages, the software industry has no similar to the inclusive handbooks found in other design disciplines. Although the presented patterns literature has made stable improvement towards creating handbooks for software engineers the absolute goal has not been achieved. As discussed previous, Grady Booch has joined this effort and is collecting thousands of patterns to create a *Handbook of Software Architecture* that represent ting their vital roles and relationships and allow associations across domains and architectural styles.
- **Web 2.0.**The Web progressively provides the perspective for more vibrant and open business models, where ‘harnessing collective intelligence’ becomes the means of production and next-generation Web (famous as ‘Web 2.0’) becomes the standard. The preliminary set of Web 2.0 patterns documented by Tim O’Reilly (www.oreillynnet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html) captures some key rising and established practices in this area. We predict that more patterns will be documented for this domain
- **Process and organizational structure.** The emergent implementation of agile development processes and practice with these processes proposex we will carry on to see a growth in parallel pattern literature. Some of this literature will center of attention

on macro-process featured, such as on the whole lifecycle and communication with the industry, and various will focus on micro-process aspects, such as test-driven development, refactoring, and tool usage.

- ***The Gang-of-Four.*** In the past Many books and papers have been published about the Gang-of-Four patterns. The whole secondary business will carry on feed the unappeasable demand for reflections about the Gang-of-Four work. Illustrations contain companions on how to apply the patterns in other programming languages, alternative ways, and the suitable scope of the patterns, and negotiations about whether one or other pattern is not a pattern, or is obsolete. There is converse of a second edition of the Gang-of-Four book, while the time frame for its release has not been completed.
- ***Pattern theory.*** Work on the fundamental theory of the pattern theory will prolong over the coming years, researcher community focusing on deepening the facts about known facets of the pattern theory, such as pattern sequences, and discovering new and most modern views onto it. Even though there is still much scope for consolidation, amplification, and communication of hypothetical concepts, we accept as true that the most attractive trends in future are linked with the domains in which patterns are documented, rather than in theory contiguous patterns.

As number of developers and research are growing in design patterns community they are bringing new ideas and experts for this domain they are not only trying to develop new ideas also working to mature existing ones. New design patterns are providing solutions and new paradigm in development practices, the researcher community trying to documenting and mature the existing design patterns with new solutions .Patterns and pattern languages are not end here in the future they can be more than of above mentioned areas this is only based upon our research pattern community; it's a collection of research activities and ongoing planned interests so this is not an end

Ubiquitous computing:

In Ubiquitous computing challenges rate is very high similarly in mobile systems. Ubiquitous means computing is everywhere, anywhere and anytime.

Ubiquitous computing get from two thing mobile computing and intelligent environment. An intelligent environment is a location (e.g. home, office, hospital, etc.) that is equipped with sensors and computers that are networked with each other and the internet. So in future we need

some generic design for Ubiquitous computing because we need huge, complex systems which will control

- Billions of processors
- Multiple organisations
- Managing physical world
- Controlling sensors, actuators

Billions of processors:

To develop design of billions of processor we might be aware of some key topics that developed rapidly in recent times.

- pipelining (superscalar, OOO, VLIW, branch prediction, predication)
- Multi-core and simultaneous multithreading (SMT, hyper-threading)
- SIMD vector instructions (MMX/SSE/AVX)
- Caches and the memory hierarchy

Multiple Issues – Superscalar:

We discussing some existing things how they works. Since the execute stage of the pipeline is really a bunch of different functional units, each doing its own task, it seems appealing to try to execute multiple instructions in parallel, each in its own functional unit. To do this, the fetch and decode/dispatch stages must be enhanced so they can decode multiple instructions in parallel and send them out to the "execution resources".

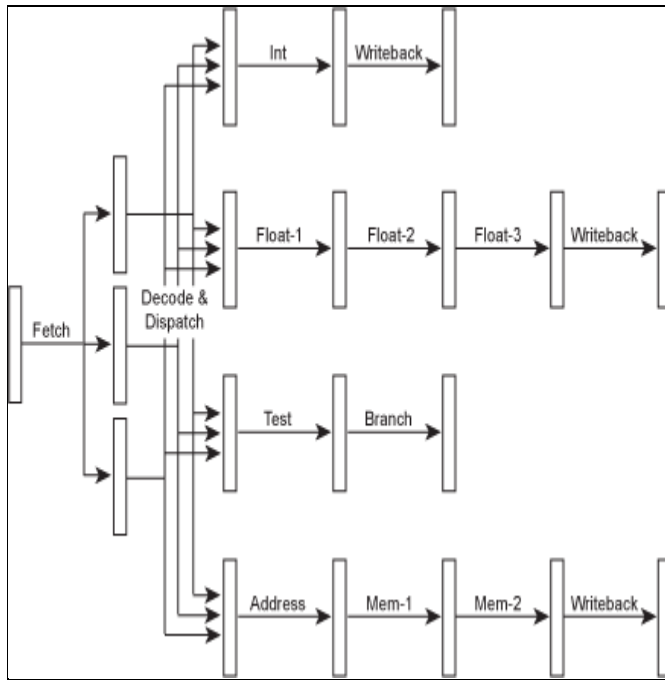


Figure: A superscalar microarchitecture.

Explicit Parallelism – VLIW:

In cases where backward compatibility is not an issue, it is possible for the instruction set itself to be designed to explicitly group instructions to be executed in parallel. This approach eliminates the need for complex dependency-checking logic in the dispatch stage, which should make the processor easier to design, smaller, and easier to ramp up the clock speed over time.

In this style of processor, the "instructions" are really groups of little sub-instructions, and thus the instructions themselves are very long, often 128 bits or more, hence the name VLIW – very long instruction word. Each instruction contains information for multiple parallel operations.

A VLIW processor's instruction flow is much like a superscalar, except the decode/dispatch stage is much simpler and only other than the simplification of the dispatch logic, VLIW processors are much like superscalar processors. This is especially so from a compiler's point of view. It is worth noting, however, that most VLIW designs are not interlocked. This means they do not check for dependencies between instructions, and often have no way of stalling instructions other than to stall the whole processor on a cache miss. As a result, the compiler needs to insert the appropriate number of cycles between dependent instructions, even if there are no instructions to fill the gap, by using NOPS (no-operations, pronounced "no ps") if necessary. This complicates the compiler somewhat, because it is doing something that a

superscalar processor normally does at runtime, however the extra code in the compiler is minimal and it saves precious resources on the processor chip [15], [16].

No VLIW designs have yet been commercially successful as mainstream CPUs, however Intel's IA-64 architecture, which is still in production in the form of the Itanium processors, was once intended to be the replacement for x86. Intel chose to call IA-64 an "EPIC" design, for "explicitly parallel instruction computing", but it was essentially a VLIW with clever grouping (to allow long-term compatibility) and predication. The programmable shades in graphics processors (GPUs) are sometimes VLIW designs, as are many digital signal processors occurs for each group of sub-instructions.

Heterogeneous Environment:

We have different frame work like windows, Linux etc. If we need to integrate windows with Linux and both users want to communicate with each other so we need generic design pattern to integrate different frame work. Interactions will be cross multiple organisational boundaries specification, analysis and integration for heterogeneous OS, databases, firewalls, routers.

Context Adaptation:

A context adaptive system enables the user to maintain a Certain application (in different forms) while traveling between different wireless access technologies, locations, devices and even simultaneously executing everyday tasks like meetings, driving a car etc.

There are many issues like Current location, User activity, Surrounding area, Device capabilities. We need design pattern for context adaptation.

Intelligence Environment:

Intelligence environment means embedded Computing for enhancing physical objects. We can achieve intelligence through interconnection of physical objects and location awareness e.g. Automated call forwarding, Lighting control, Smart sensor wall, Control heating and lighting. We need design pattern for intelligence environment and integrate different intelligence environment [17], [24], [25].

CONCLUSIONS

At the end we are summarizing the research of Gang-of-Four patterns so many publications are published for software quality attributes with the help of design patterns in anticipation of now, the research efforts make controversial consequences and practitioners must utilize judgment

to select the most appropriate design. Moreover, the results verify that patterns are about trade-offs. Design patterns improve one quality element in the cost of another. thus, design patterns cannot be differentiate as collectively “good” or “bad”, but the quality attributes that are significant for the exact application must be inspect as well. The above declare indications propose that in the near future, researchers might challenge to narrow these gaps by utilizing research methods and techniques other than experimental methods, to examine the consequence of pattern application on software quality attributes by analytical method we consider that research on both design patterns and software engineering in common are still in need of experimental studies. Moreover, this mapping study pointed out numerous gaps in the research circumstances of the art regarding the effect of patterns on software quality, as conclude below:

- Understandability of design pattern
- Reusability of design pattern
- Modularity of design pattern
- Robustness of design pattern

REFERENCES

- [1] Christopher Alexander et. al, A Pattern Language : Towns, Buildings, Construction, Oxford University Press, New York, 1977.
- [2] Erich Gamma et. al : Design Patterns : elements of reusable object-oriented software, Addison-Wesley professional computing series), 1994, (Gang of Four).
- [3] F. Buschman et al., Pattern-Oriented Software Architecture, Volume 1: A System of Patterns Wiley, 1996.
- [4] Buschmann et al, Pattern-Oriented Software Architecture , A System of Patterns. John Wiley & Sons, 1996.
- [5] W. B. McNatt and J. M. Bieman, “Coupling of Design patterns: Common Practices and Their Benefits”, 25th Annual International Computer Software and Applications Conference (COMPSAC'01), IEEE, pp.574, Chicago, Illinois, 08-12 October 2001
- [6] T. Mens and T. Tourwe, "A declarative evolution framework for object-oriented design patterns," Proceedings IEEE International Conference on Software Maintenance. pp. 570-579, Florence, Italy, 2001,
- [7] M. Fowler, Patterns of Enterprise Application Architecture, Addison-Wesley 2002.
- [8] E. Gamma, et al., Design Patterns: Elements of Reusable Object-Oriented Software, Addison Wesley, 2004.
- [9] J. Coplien et al., Organizational Patterns of Agile Software Development, Prentice Hall 2004.
- [10] C. Steel et al., Core Security Patterns: Best Practices and Strategies for J2EE Web Services, and Identity Management, Prentice Hall, 2005.
- [11] M. Schumacher et al., Security Patterns: Integrating Security and Systems Engineering, Wiley 2006.
- [12] D. Manolescu et al., Pattern Languages of Program Design: Volume 5, Addison-Wesley, 2006

- [13] T. H. Ng, S. C. Cheung, W. K. Chan and Y. T. Yu, "Toward effective deployment of design patterns for software extension: a case study", Proceedings of the 2006 international workshop on Software quality (ICSE'06), IEEE, pp.51-56, Shanghai, China, 21 May 2006
- [14] F. Buschmann, et al., Pattern-Oriented Software Architecture, Volume 4: A Pattern Language for Distributed Computing, Wiley, 2007.
- [15] G. Meszaros, XUnit Test Patterns: Refactoring Test Code, Addison-Wesley, 2007.
- [16] F. Buschmann, et al., Pattern-Oriented Software Architecture, Volume 5: On Patterns and Pattern Languages, Wiley 2007.
- [17] Tanvir Ahmed, Professor Engr. Dr., Software crisis and finding a silver bullet solution: International Conference on Engineering and Emerging Technologies, Mar 20-21, 2014, Superior University, Lahore, Pakistan
- [18] Tanvir Ahmed, Professor Engr. Dr., How Transformational Programming was being used towards developing Software Development Factory? : International Conference on Engineering and Emerging Technologies, Mar 20-21, 2014, Superior University, Lahore, Pakistan
- [19] Hsueh, N.L., Wen, L.C., Ting, D.H., Chu, W., Chang, C.H., Koong, C.S.: An Approach for Evaluating the Effectiveness of Design Patterns in Software Evolution. In: IEEE 35th Annual Computer Software and Applications Conference Workshops, pp. 315–320 (July 2011)
- [20] Tanvir Ahmed, "Cloud Computing a Solution for Globalization", International Journal of Education and Management Engineering (IJEME), Vol.6, No.4, pp.30-38, 2016
- [21] Dr. Tanvir Ahmed, Tamoor Khan, " Human Emotion Recognition and Prediction Using Socialism Media ", IJCSIS Vol. 14, pp. 624-633, June 2016.
- [22] Muhammad Azam, Tanvir Ahmed, Fahad Sabah, Muhammad Iftikhar Hussain : " Feature Extraction based Text Classification using K-Nearest Neighbor Algorithm" : IJCSNS International Journal of Computer Science and Network Security, Vol. 18 No. 12, 2018, pp. 95-101.
- [23] P. Arcaini et al. A pattern-oriented design framework for self-adaptive software systems, 2019 IEEE International Conference on Software Architecture Workshops, ICSA Workshops 2019, Hamburg, Germany, March 25–29, 2019
- [24] Muhammad Azam, Dr. Tanvir Ahmed, Dr. M. Usman Hashmi, Rehan Ahmad, Abdul Manan, Muhammad Adrees, Fahad Sabah : " Improvement in Classification Algorithms through Model Stacking with the Consideration of their Correlation" : (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 10, No. 3, 2019
- [25] Muhammad Azam¹, Tanvir Ahmed¹, Rehan Ahmad², Ateeq Ur Rehman³, Fahad Sabah¹, Rao Muhammad Asif^{4,*}: A Two-Step Approach for Improving Sentiment Classification Accuracy": Intelligent Automation & Soft Computing, Vol.30, No.3, pp. 853-867, 2021

Web Application Vulnerabilities: Counter measures and Assessment Techniques

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Abstract

In the current age of technology, web applications and websites had a broad and significant growth all over the world, hence a major part of technological life depends on it. The security of web applications and websites is one of the key areas of research for researchers and technologists. Web applications offer benefits, which makes user's life easier. With the help of this paper the study of existing vulnerabilities, cyber-attacks, and vulnerability scanning tools and their loopholes in web applications and websites were identified. Review highlights that with the developments and deployments of web applications on the internet users are chasing by a remarkable number of cyber- attacks. Attackers take advantage of available vulnerabilities in a web application or website. Selected commonly used open source vulnerability tools were analyzed and loopholes in web applications were identified. This paper highlights web vulnerabilities that causes difficulties, like poor programming, not using secure and updated protocols, miss-configuration as a major one.

Keywords- *Web security, vulnerabilities, web applications, open source tools.*

1. Introduction

In today's digital world of ever-increasing technology, it would be difficult or almost impossible to live without these technological advancements. In respect to this, cybercrimes have a noticeable increase and every day thousands of devices and services are being attacked in cyberspace in order to access important information or organizations, therefore cybersecurity has gained much importance and also it become a part of our life. Whenever a person is submitting or uploading their data online on the internet, that data becomes vulnerable to a huge number of cyber-attack or cybercrimes, which cause significant damage to the business and services associated with government or organizations.

Cybersecurity offers security and techniques to secure unauthorized access or exploitation for massive data available online, associated application, networks which is used for communication and devices connected to the network. Cyber Security involves the protection of important information and also devices from occurring cyberattacks on cyberspace. Collection of customers information, social platforms where personal and private information is being collected and also government organizations where secret, defense and political information are maintained and managed in huge databases. It describes how personal and governmental data can be protected from vulnerable attacks on cyberspace. With respect to growth in the number of web-based services users every day, there is a huge increase in the number of threats to the information as well, with the cost of cybercrimes estimated in billions. [1]. Web applications are one of the great technologies which had a frequent improvement in the last decade, web application technology improved both the quality and ability of the services

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offered by most of the organization. Web applications are included almost in most of today's life and become a major part of today's business which made it easy to have interactions and communications with customers. Websites and web applications are the combination of one or more than one web page which is being accessed using browsers on devices connected to a server.

As the improvements and the need to access the web applications and web sites are increasing day by day, there is a huge risk that unauthorized persons or identity on the network (internet) will access or modify the confidential data and also maintaining the integrity among them. Software and web applications are designed and developed with the motivation of providing features and functionalities to address the needs of users and customers by providing easier usage. Web application security emphasis on different software bugs available in an application which will cause the application to do something bad. [2]

Websites that provide huge services and facilities like Banking, Business transactions, online shopping, social networking are having a higher risk of being victims of unauthorized access or modification of information stored in databases. They should keep the servers up to date and also identify the vulnerabilities and loopholes to make their services and confidential information secure. Consequently, the enormous growth in the number of vulnerabilities and attacks on web sites and web applications make it important to study and identify the vulnerabilities to secure web applications and websites from being a victim.

The real attack on a web site or web application happens the transaction is being initiated between the server and the client and later on the server sends the information to the client. When the application is being rendered it has a greater chance that the intruder or attacker input the malicious code through the browser. Accordingly, common type of misconfigurations such as full path disclosure, error reporting, standard passwords, default settings, and many other weaknesses which cause information leakages which may have a good value for intruders to attack and access the services are available in four out of five web applications. In 2018, there was a fall in the percentage of web applications having vulnerability to XML External Entities (XXE). This vulnerability entered the OWASP Top 10 list in 2017, immediately taking fourth place [3], shown in Fig. 1.

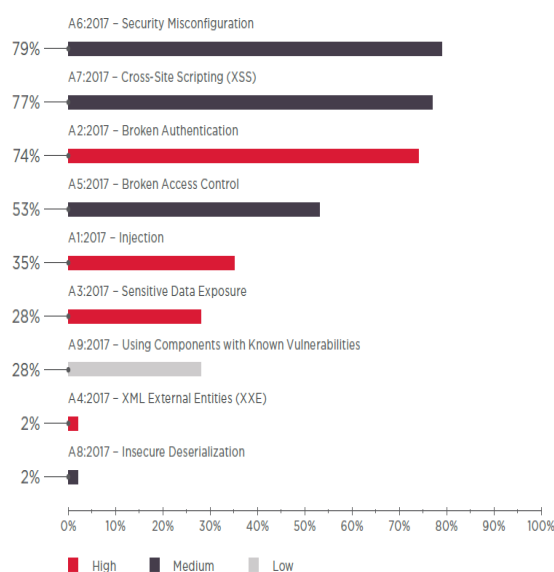


Fig 1. OWASP Top 10–2017 vulnerabilities percentage available in web apps.

The measures to these security threats and attacks on web applications is to identify the vulnerabilities and understand the attacks and countermeasures to them and ask the developer to fix the loopholes available at the application. [3]

Accordingly, the main contribution of this paper is to:

- Investigate the top ten web application vulnerabilities which poses huge risk to organization.
- Discusses various countermeasures which can be implemented to mitigate web application vulnerabilities and reduce the risk of exploitation.
- Introduce and evaluate various open-source vulnerability assessment tools which can be used to identify and assess web application vulnerabilities.
- Highlight the importance of proactive vulnerability management and ongoing monitoring of web applications to ensure that they remain secure over time.

2. Related Work

Alzahrani et al. [4], demonstrated the architecture of web applications and also studied and evaluated a number of security vulnerabilities. According to the study, about 49% of the web application that have been reviewed are having vulnerabilities with high risk life. Furthermore, the tools that have been used to scan those most common vulnerabilities like cross site scripting, SQL Injection, Information leakage and insufficient transport-layer protection are also analyzed. It is also stated that in some cases the designing and development errors causes most of the vulnerabilities in web application. In addition to that, weak and insufficient administration can cause vulnerabilities like information leakage and insufficient transport-layer protection, so they have elucidated the usage of those tools which helps in preventing those vulnerabilities. Consequently, each tool advantages and disadvantages are also discussed. According to this paper, security assessment tools can be used in either browser-side or server-side and it can also be used in both sides.

Patel [8], conducted a study on the common vulnerabilities, resolution of those vulnerabilities, as well as the author proposed some methodologies and tools used for determining those vulnerabilities of the time which helps organizations to secure their services and mitigate the risk of attacks which can be caused from those vulnerabilities. The proposed tools are both commercial and open source. To make the outcome result of the proposed tools, they have prioritized and also explained with the CVE number, that can be utilized from industry standard references.

Nagpure et al. [7] provided a analysis of web application vulnerability assessment along with penetration testing techniques. This study highlights that manual penetration testing accuracy is much effective to perform security assessments as compare to automated penetration testing. It is also mentioned that using manual testing technique most famous web vulnerabilities such as Cross site scripting, clickjacking, SQL Injection, fileupload and other weakness are detected in many web applications. Relatively, in terms of time and money saving, automation testing technique can also use to detect some web application vulnerabilities and can also perform automated web application penetration tests. Finally, they have proposed that for vulnerability assessment, companies should have a combined vulnerability assessment method of both manual and automated testing techniques which will definitely enhance the accuracy in detecting vulnerabilities in web applications.

Sing et al. [19], have studied a number of common attacks like SQL Injection, Cross Site

Scripting (XSS), etc and also proposed a tool which is based on XAMPP server for both server and client environments, which will help the security analysts and students to perform checkup and analysis of web application vulnerabilities. The tool which is proposed is mainly focusing on OWASP list of top 10 attacks, which is a good mean for developers to fix weakness and bugs using those queries which are used for accessing the back-end information.

Singh et al. [20] discussed the tools where the cybersecurity professionals can ethically perform attacks to learn about vulnerabilities and also proposed a tool with a legitimate structure that avoids different web attacks. The authors stated that SQLI, broken confirmation, session management and XSS are the basic provision strike found on the web. A large number of systems are reviewed against impediments, accordingly, most of the people are utilizing web administration to their reduction on the globe to relieve themselves, which cause them huge costs.

Tyagi et al. [21] studied OWASP WAP and RIPS, two web application vulnerability detection tools which are basically source code analysis tools. They have done an experiment on (DVWA) and a (bWAPP) web applications which are vulnerable and full of bugs, based on the experiment, they found that OWASP WAP provides better results as compared to RIPS. With the help of vulnerable web applications used in the experimental scenario, we can easily detect vulnerability whether they are TRUE positive or FALSE positive. Accordingly, it is stated that the commercial version of RIPS may generate better results, but in some cases open-source tools can only be needed.

Al-Sanea et al. [22] presented the result of assessing and testing the security posture of almost 150 websites from different categories like financial, governmental, commercial and academic website of Sudan Arabia with the help of open source vulnerability assessment tools available in the market. Many vulnerabilities with different level are found, the number of affected websites were large. In addition, government websites were more secure as compared to commercial websites.

Huang et al. [23] have discussed many web application vulnerabilities and proposed several countermeasures and pitfalls. With respect to that, VulScan which is a new vulnerability assessment tool that uses penetration testing and combinative evasion techniques in order to discover cross site scripting and injection vulnerabilities in a system is being introduced, which will improve the system security. To evaluate the accuracy introduced system, a number of real web application like OWASP's WebGoat has been selected for testing. Accordingly, the total vulnerabilities detected by the VulScan is compared with the total number of vulnerabilities detected by ZAP. According to the results of the systems, VulScan was able to detect more SQL Injection and also Cross Site Scripting vulnerability than the OWASP's ZAP.

Moniruzzaman et al. [24] studied a technique to detect maximum number of vulnerabilities using source code analysis and penetration testing techniques with minimum efforts. In this method they have evaluated a number of specific web site in Bangladesh against some most common web vulnerabilities and attacks. The result showed that around 64% of the evaluated web applications are having vulnerabilities, especially governmental organizations are in serious risk.

Sandhya et al. [25] enlightened the need to utilize penetration testing, and also with the help of Wireshark, they have done penetration testing in order to assess the security of web sites. They have stated that, Wireshark tool helps ethical hackers to underpin the system security in users at the level of authentication only and proved that its better and rapid way out to deal with vulnerabilities.

Pranathi et al. [26] reviewed the customer side answer to mitigate and solve the cross-site

scripting attack. They have claimed that, because of poor web surfing background the client system performance is decreased. Therefore, they have provided a client-side arrangement which is use a well- ordered that deal with ensure cross site scripting web applications. The framework which is proposed is based on how to attack a web site through cross site scripting utilizing the contents with the final goal of preventing attacks.

Efendi et al. [27] studied various deception techniques which could be used as a defined mechanism to sense web application attacks and also act as a distraction and protection mechanism to keep the attacker away from the actual protected services.

Yadav et al. [28] reviewed several evolving trends and prevention from web attacks. They have also discussed about prevention from several vulnerabilities available in web applications by providing suitable data types to input, restriction in the use of web server, http request and restrictions for users to access the files from the root directories. Consequently, overall security preventions for operating systems and mobile applications are also discussed. They have also proposed that the government beside promoting digitalization should also focus restricting rules and regulations to protected vital information from attacks and frauds.

Gillman et al. [29] surveyed a number of most common website attacks and also techniques in order to mitigate them. They mentioned that the attack detection and mitigation is increasingly involves frequently performing the processing operation over a large amount of data which is across multiple and different websites with a specific interval of time. It is also stated that the latest modern attacks are using many different methods to infect a system and can continue for several months. They have also described the impact and importance of comebacks to lessons learned from those series of attacks which happened in 2012-2013 on Akamai's customers dubbed operation Ababil.

Alenezi et al. [30] have tested different open source web applications against some most common security vulnerabilities. They have done static security vulnerability test in three different categories: (a) Dodgy code Vulnerabilities (b): Malicious Code Vulnerabilities (c): Security Code Vulnerabilities on different web applications available. They have recommended an intelligent development frame work which can provide suggestion in order to have a secure development, can add missing codes and also learn from other expert developers' practices in order to mitigate and solve common security vulnerabilities on web applications.

Nababud et al. [31] study focus on penetration test comparison of use of http and https on websites using Wireshark tool. Wireshark is used to perform penetration testing campus webmail individually and tried to find its vulnerability. They have stated that if the users want to keep data secure, they should use webmail which is encrypted by HTTPS protocols in data communications.

Shrivastava et al. [32] based on study of previous research and their implementations, studied the detection and prevention methods of all three types of cross site scripting (XSS) vulnerability. They have tested so many web applications and as a result they found that cross site scripting issues are in a higher priority. As in the existing techniques usually the developers are using Java validation and also input filters in order to prevent client-side infected inputs, on the other hand, some more secure web applications use Application level firewalls in order to filter the user's input, but still they were not able to totally stop the cross site scripting (XSS) attacks. In their assessment they have found that these are not enough to prevent (XSS) with dangerous payloads. They stated that, the use of those existing techniques can only the direct infected inputs from browsers side, but they are not that much strong to prevent the middleware happening attacks. In their system, they have used the JavaScript validation technique for users

input, JavaScript signature mechanism in order to identify valid JavaScript, sanitization mechanism to clean HTML text, token assignment mechanism for client-server request during communication, use of HTTPOnly cookies flag, and lastly they have also suggested to use strong application level firewall and proper security assessment and scanner tools to detect XSS. It is stated that their proposed system can help the developers in handling and detecting different cross site scripting (XSS) vulnerabilities. They have suggested that hierarchical system because that single level security is not sufficient in order to prevent XSS vulnerabilities.

Table [1]: comparative analysis of related studies.

Study	Methodology	Findings	Tools used
Alzahrani et al. [4]	Studied and evaluated security vulnerabilities in web applications	49% of reviewed web applications have high-risk vulnerabilities	Scanning tools for common vulnerabilities such as cross-site scripting, SQL injection, information leakage, and insufficient transport-layer protection
Patel [8]	Studied common vulnerabilities and proposed methodologies and tools for determining them	Prioritized vulnerabilities and provided CVE numbers	Both commercial and open-source tools
Nagpure et al. [7]	Analyzed web application vulnerability assessment and penetration testing techniques	Manual testing is more effective than automated testing for accuracy	Manual and automated testing techniques
Sing et al. [19]	Studied common attacks and proposed a tool for analyzing web application vulnerabilities	Proposed a tool based on XAMPP server for analyzing web application vulnerabilities	Focused on OWASP list of top 10 attacks
Singh et al. [20]	Discussed ethical hacking and proposed a tool with a legitimate structure that avoids different web attacks	Stated that SQLI, broken confirmation, session management, and XSS are the basic provisions strike found on the web	Ethical hacking tool
Tyagi et al. [21]	Studied OWASP WAP and RIPS, two web application vulnerability detection tools	Found that OWASP WAP provides better results than RIPS	OWASP WAP and RIPS
Al-Sanea et al. [22]	Assessed and tested the security posture of almost 150 websites from different categories	Found many vulnerabilities with different levels and that government websites	Open-source vulnerability assessment tools: W3af and SkipFish

		were more secure than commercial websites	
Huang et al. [23]	Discussed web application vulnerabilities and proposed countermeasures and pitfalls	Introduced VulScan, a new vulnerability assessment tool	VulScan and OWASP's ZAP
Moniruzzaman et al. [24]	Studied a technique to detect vulnerabilities using source code analysis and penetration testing techniques	Around 64% of evaluated web applications have vulnerabilities	Source code analysis and penetration testing
Sandhya et al. [25]	Highlighted the need to utilize penetration testing and used Wireshark for penetration testing	Wireshark tool helps ethical hackers to underpin system security	Wireshark
Alazmi and Leon [33]	Reviewed the effectiveness of frequently used web application vulnerability scanners.	The study found that out of 12 study, most of the evaluations tested only two of the OWASP top ten vulnerability types. And only one work evaluated six of OWASP top ten vulnerability types	Open source and closed source.
Shahid et al. [34]	A number of application vulnerability assessment tools were surveyed and evaluated based on their capabilities, strength and weaknesses.	The paper found up that ZAP has a higher vulnerability detection as compared to Acunetix and NetSparker.	Open source and closed source, specifically; OWASP-ZAP, Acunetix, and NetSparker

3. Working of Web Applications

A large number of businesses, organizations and government agencies use the internet as a cost-effective, fast and secure communication medium with their customers and users. The effectiveness of this technology is when that the organization is able to collect and store the data and have a proper system to analyze, process and present the data back to the user, they provide the functionality to the users to use the services without downloading and installing any other software. Web applications are composed of one or many web pages that are stored and maintained on a server, and the users can access them using a web browser already installed on their devices, shown in Fig. 2. Web applications use together the server-side scripting languages like PHP and ASP to manage the storage and retrieval of the information, client-side scripting languages like JavaScript, CSS (Cascading Style Sheet) and HTML (Hyper Text Markup Language) to present the information to the users and back-end databases, where the data is being kept. This allows the users and customers to contact with the companies, fill the forms, do online shopping and also it allows the employees to manage the information, share information, create and edit documents and work on projects. [4] Here is the web applications workflow:

- The user sends a request over the internet or a local network to the server through either a web browser or an application user interface.
- The received request will be forwarded to an appropriate web application server.
- The application server will process the request by manipulating data from database, and the result will be delivered to the user.
- Web server will receive the processed data from the application server.
- Web server responds back to the user's browsers and the requested data is being displayed on the user's screen.

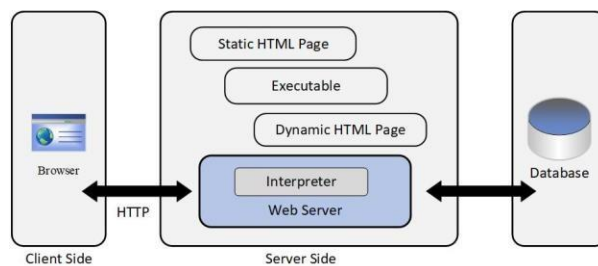


Figure 2. Web Applications Architecture

4. Common Web Application Vulnerabilities and Counter Measures

In cybersecurity, vulnerabilities are the security flaws and weakness which allow the intruder or unauthenticated users to perform an unauthorized action or damage the system or services. The attacker or intruder who wants to exploit the vulnerability of a system should have at least one tool or a technique to establish a connection with the weakness or flaw which is there in the system.

There are immense number of vulnerabilities found every day, and it is difficult to remove or eliminate the web application vulnerabilities, because for two main reasons. First, mostly the web application development phase is too rapid which is very short time. Secondly, in most scenarios, the Management Information System engineers (MIS) are involved in the process of developing web applications, most of whom are having not as much of trainings and professional experience at large software firms, like Microsoft, Apple, Google and Facebook. [5]

The Open Web Application Security Project (OWASP) is an online community which is producing articles, technologies, tools, documentations for improving application security which are available for free.

OWASP Top Ten project: The "Top Ten" project was first published in 2003, and it is regularly updated. The aim of this project is to identify some of the most serious threats which organizations and business are facing and raise awareness about application security. [6]

“The OWASP top 10-2017 used more than 40 data submissions from application security and also by an industry survey which was completed by over 500 individuals, gone through vulnerabilities gathered from hundreds of organizations and more than 100,000 real-world applications”. [6]

4.1 . SQL Injections

According to web application architecture, web applications are using databases at the backend, to which web pages are connected in order to store and fetch the user's data to database and display it to the browser or user interface. The intruders are trying to exploit database layer vulnerabilities using SQL-Injection which will help to understand the schema of the database which is the most important part of a database, that will allow them to add or include data within the schema of the database. Mostly this attack is happening because of lack of a proper checking and filtering mechanism for the users input in the client side before the data is being input to the database system. [7]

In SQL-Injection, the intruder sends unreliable data (malicious code) as a part of SQL Command or query to an interpreter. Malicious code executes that type of queries which can give access to attacker to receive sensitive data from database. Using the INSERT, DELETE, and ALTER queries, the attacker can modify and change the data available in database, which affect the integrity of data in database. Consider the following URL which is requested from aLibrary web application which displays books in different sections.

<https://abc.com/section?sec=Science>

An SQL query which will retrieve details of the desired section books from database will be generated.

```
SELECT * FROM books WHERE cat = 'Science' AND active = 1
```

It will return all books which belongs to Science section and are allowed to be displayed to the users. The active=1 provide a restriction which will hide the books which are not set to be displayed to the users. For the hidden books the value is released = 0

Consider that the application is vulnerable to SQL Injection attack, so attack can be implemented like: <https://abc.com/section?sec=Science'--> Query generated from the above request will be like:

```
SELECT * FROM books WHERE section = 'Science'--' AND active = 1
```

The double dash (--) sign will make the rest of query as a comment which will not be interpreted by the server, so it eliminates the impact of AND active=1, which will display all books which should be displayed or which should not be displayed to the users. In order to avoid SQL-Injection attacks on web application, the data should be

- Isolated from commands and queries.
- Periodically update and also patch the system.
- Use of safe APIs for web applications are highly recommended.
- Deploy appropriate privileges in your system.
- There should be a proper input validation system.

4.2 Broken Authentication and Session Management

The process of verifying an entity or web app which claims to be legitimate is called authentication. Accordingly, the term broken means: inadequate password policies, infinite logon attempts, information leakage or failed logins and insecure password recovery procedures which results to by-pass the authentication, receive complete control of accounts, account theft and access to sensitive data and damage to data. Authentication and session management is also one of the important part web application security, for which the developer should implement proper security practices to secure it. Flaws and bugs in this part can cause many failure in protecting users' credentials and session tokens which leads to serious damages like accessing users accounts or administrator accounts, privacy violations and alteration of credentials in database. [3]

In web applications the sessions are established to keep the track of requests which are received from users' side. Accordingly, HTTP is not having the above-mentioned feature, thus, the developers are responsible of creating them. The session tokens which are assigned to the users should be secured and protected properly, because the attacker can hijack an active session anytime and undertake the identity of a user. Through this vulnerability the attacker will be able to compromise passwords, keys, or session tokens assigned by the system by which it will assume other user's identities. [6]. Mostly all web applications environments, web servers, and application servers are vulnerable to this vulnerability. Assume that Application session timeouts are not set properly in an application. A user is properly authenticated and logged in a public computer system in order to have access an application. At the end, instead of clicking the "logout" button to properly logout of the system and end the session. the user just clicks the close button of the browser. Few moments later an attacker can access the same application page using the same browser with that user's authentication. Because the session was still active and not destroyed. The following rules should be focused and enforced by the developer for providing a higher security for applications.

- Proper mechanism for enforcing the strength, length and complexity of passwords.
- Proper mechanism of hashing or encrypting the storage of the passwords.
- Proper mechanism and rules for controlling the changing of the passwords
- Proper mechanism for protecting the active session ID.
- Developer should implement a low secure password checking mechanism in web applications.
- Do not set the default or commonly used username and passwords, especially for admin accounts.
- A secure built-in session management policy or session manager should be enforced and implemented in server side by the developer, in which a uniquely random session IDs are securely created, assigned and maintained only for legitimate users after successful login. And also, those IDs should be invalidated and destroyed after the logout, timeouts and being idle for some time. Accordingly, the generated IDs should not be included in the URL of the application.
- The failed login attempts should be limited and also there should be a system to log all failures and alert administrator when attacks are detected.

4.3 Exposure to Sensitive Data

This is one of the widespread attacks with great effect on web applications security. In vulnerability, the attacker is trying to access and receive clear text and keys from the server or perform a man in the middle attack when the data is being transferred from client's browser to server. Instead of attacking the encrypted or crypto data directly. "773 Million Users credentials leakage from different attacks are reported in early 2019, which is really a big security misdeed". [8]

If the sensitive data is not encrypted, weak key generation and management, weak algorithms and protocols for data which is in transit from server side to client side are employed over data are most common type of flaws. Assume that a web application is using an automatic database encryption mechanism for encrypting credit card numbers in database. However, this means it also decrypts that data automatically when it is being retrieved, this allows a SQL injection flaw to retrieve credit card numbers in clear text. [6]. The following steps can be taken to prevent such a scenario.

- Classifying the data that is processed, stored, or transmitted by an application to categorize the sensitive data.

- ☐ Applying the controls according to classification.
- ☐ Encrypt sensitivity of data at rest.
- ☐ Use only widely accepted implementations of protocols available, cryptoalgorithms and appropriate key management.
- ☐ Encrypt all data which are in transit from server side to client using TLS (which is highly secure protocol), enforce encryption using directives like HTTP Strict Transport Security (HSTS)
- ☐ Always ensure data integrity and authenticity
- ☐ Store passwords hashed and salted

4.4 XML – External Entities (XXE)

With the help of this vulnerability the attacker will be able to interfere with application's XML data processing. The attacker can exploit vulnerable XML processors by uploading XML or including hostile content in an XML document, exploiting vulnerable code. Mostly it enables the attacker to view and interact with files available on the server filesystem and also communicate with backend or any other external system with which the application itself is having access to it. In certain cases, the attacker will be able to deteriorate an XML - External Entity attack to compromise the targeted system or other infrastructures available in the backend, scan internal systems, executing remote request given by the server, perform a denial of service attack by leveraging the XXE vulnerability to perform (SSRF) or other types of attacks. [9]. There are different types of application which provide file upload services to the server. Some of those files use the XML or may contain XML as their subcomponents. For Example, DOCX for office document formats and SVG for images are XML-based formats.

Assume that a web application is having the feature that the users can upload images which are being processed and validated on server after they are uploaded. As the SVG format which is a known type of format for images uses XML, this enables the attacker to submit the malicious SVG image and will be able to get access to the hidden environment to exploit XXE vulnerabilities. The following are some of the preventions to avoid such situations.

- Mostly application's XML parsing library are supporting many dangerous and risky features of XML which does not need to use, therefore the disabling those features will help to prevent XML attacks effectively.
- Verify that XML or XSL file upload functionality validates incoming XML using XSD validation or similar. [6]
- Implement whitelisting mechanism for input validations in server-side and filtering to prevent hostile data within XML documents, headers, or nodes.

4.5 Broken Access Control

Access control is the procedure that defines how the applications grant access to contents and functions, which is also called Authorization. For developers it is a challenging task to implement a reliable access control system and policy for their applications.

This weakness is mostly common due to lack of effective functional testing by application developers or lack of automated detection.

An effective method of detecting missing and ineffective access control is performing manual testing, which also includes HTTP methods as well.

The Access Control enforces policies for users, such that the users should not be able to act outside their given permissions domain. Mostly the failures in the system cause unauthorized

access to information, modification and also destruction of data or performing and executing some actions which are outside the limit and permission of the user. Bypassing access control checks by modifying URL and simply using a custom API attack tool are the common access control vulnerabilities. [10] If a non admin or an unauthenticated user can access any one of these pages, it is considered as a flaw. To prevent users can follow

- Log and alert access control failures to admins when appropriate.
- Use HTTPS instead of HTTP
- By default, denying access to functionality.
- By using Access control lists and role-based authentication mechanisms.

4.6 Security Misconfiguration

This vulnerability occurs when the developers are not able to implement all security controls for a server or a web application, or doing errors while implementing those security controls and policies. Hence, the organization is thinking that they are having a safe and secure environment, but actually it has dangerous mistakes and gaps which can lead to different vulnerabilities and security risks.

Attackers will often get benefit of unpatched flaws or by accessing default account, unprotected files or unused pages to get unauthorized access to the system. Any kind of loophole or security weakness can be exploited by attacker, which can lead to unauthorized access to the system. For having a highly secure web application, it is required to secure the already defined and deployed configurations for our web applications, web servers and other entities related to our web application. [11] As the application server admin console is automatically installed in the server and not removed. So, when the attacker discovers the standard admin pages are on your server, logs in with default passwords, and takes over. [11]. The following can be some the measures to prevent it.

- For having a high secure system, the organizations should have their own defined policies through which security rules are created.
- Installing, updating and regularly testing of security patches should be done.
- The effectiveness of deployed configurations should be verified in almost all of the environments using an automated process.
- Considering roles and permissions like disabling all default accounts or changing passwords in a specific interval of time, disabling administrator accounts.

4.7 Cross-Site Scripting (XSS)

This type of attack happens when a web application is used to send malicious code that is generally known as browser-side script, to a different end user. Through this attack, the attacker is injecting malicious scripts into the website code. Generally, such attack is the result of having improper input validation in user side. Therefore, this gives the attacker the ability to insert malicious scripts into the application code and will be able to get access to the application. These vulnerabilities will be used to access

confidential data, steal identities, perform session hijacking, denial of services attack or bypass the restrictions deployed on web application. XSS is one of the most dominant issue in Top 10 list of OWASP, and is found in around two thirds of all web applications. [6] The following are the types of attacks.

- **Stored/Persistent XSS:** Here the malicious contents which is called payload, mostly Java Script codes, are injected into a targeted application which will be permanently stored or persisted into the application, like in the database of application. [12]

- **Reflected XSS:** In this case, the attacker's payload will be injected as a request sent to the server. It will be reflected back as the HTTP response will include the payload from the HTTP request. Attacks are delivered via other routes like malicious links or phishing emails. When the user clicks on link or submit data, the browser then executes the code. Those attacks are mostly happened through social networks. [12]
- **DOM-based XSS:** This is an advanced type of XSS attack. It is mostly a client-side attack in which the infected payload will never be sent to the server. As the application's client-side scripts writes users data to the Document Object Model (DOM), and that data is subsequently read from DOM by application and will be outputted to browser, the attacker can inject payload which will be stored in DOM and executed during read phase from DOM. [12]

Assume that an online shopping application, in which users can embed the HTML Tags in comment section which will become the permanent component of the page, and that will cause the browser to parse them along with the rest of code whenever the page is accessed. For example, the attacks comment for an item lookslike this:

Good product, with good look <scriptsrc=http://abc.com/mycode.js> </script>

So, anytime that the page is accessed the tag in comment section will be parsed and it will activate the JavaScript file from attacker's website, which is able to steal user session cookies. The attacker could access the user's account and personal information with the help of stolen sessioncookies. The following are some of the preventive measures.

- Using Web Application Firewall is a better protection against those attacks.
- Avoid untrusted HTTP request data which are based on the context in the HTML output.
- The application code should never output data received as input directly to the browser without checking it for malicious code.
- Use modern frameworks for application development, most modern frameworks will escape dynamic content by default.

4.8 Insecure Deserialization

In web application the concept takes an object and transfers it to byte stream so that it can be in a proper format in order to traverse in HTTP network or stored in a database. The reason to use serialization is to save or persist the state of object, so whenever messages are sent across the network the state of persistence will be there. Turning back the streams of byte to same object is called deserialization. Many programming languages utilize serialization and deserialization. When the untrusted user input is taken without a proper validation and that input is deserialized from byte stream back into the object, an attacker can take the advantage of that and can insert untrusted input and the process of deserialization can lead to remote code execution attacks, which is one of the most severe types of attacks possible. [6] For example PHP forum uses PHP object serialization to save a "super" cookie, which contain the user's login details, role, password hash, and other state:

Assume that a forum created using PHP is using PHP object serialization to save certain user's information such as ID, password has, privilege and other related data:

```
a:4:{i:1;i:678;i:1;s:7:"Ali";i:3:"user"; i:3;s:32:"b6a8b3bea87fe0e05033f8f3c99bc9 60";}
```

Here the attacker will change the serialized object to gain Admin privileges.

```
a:4:{i:1;i:0;i:1;s:5:"Ahmad";i:3:"admin";i:3;s:32:"b6a8b3bea87fe0e05033f8f3c99bc9 60";}
```

The following are some of the preventions.

- Do not accept untrusted users' input
- Validate users input properly

- Network connections with containers or server which deserialize, should be monitored or restricted for both incoming and outgoing connection.
- Enforcing strict type constraints during deserialization
- Monitoring deserialization and alerting if a user deserializes constantly.

4.9 Using Component with Known Vulnerabilities

It is easy to find already available exploit for huge type of known vulnerabilities, there are some other vulnerabilities which require efforts to develop a custom exploit. In any web application some vulnerable components like working libraries can be exploited with automated tools. [6] Virtually every application has these issues because most development teams don't focus on ensuring their components or libraries are up to date. In most cases, the developers don't know the component they are using or the versions they are using and also component dependencies. If the developer doesn't know the versions of all components directly used or nested dependencies used in client and server-sides, the developed application will be highly vulnerable. Accordingly, if the software is vulnerable, unsupported or out of date Operating system, Web/Application server, DBMS, all components and runtime environments and all libraries are used in application development, the developed application will be highly vulnerable to attacks. As the web application and its components are having the same privileges, therefore any flaw or vulnerability in any component of an application can have bad effect on application itself. Those flaws can be coding error during development process or already installed backdoors in application. [6] The following can be the preventions.

- ☐ Availability of patch management system for application
 - Remove unused:
 - Dependencies
 - Unnecessary features components
 - Files, and documentation.
- ☐ Use components only from official sources

4.10 Insufficient Logging and Monitoring

This vulnerability comes into an action that events which are highly critical in security aspect are not recorded or may be omitted important information about an event when logging, or the system is not logging the currently happening events. The lack of such system makes it hard to detect and handle the attack which is happening at the moment. [13] Assume that an attacker is trying to download huge amount of data from the server, which indicate an unusual huge amount of outgoing traffic from the server. With the help of proper monitoring system, such data extraction can be detected and can be prevented such as

- ☐ Ensure all login, access control failures, and server-side input validation failures can be logged properly which will help to identify suspicious or malicious accounts. [6]
- ☐ To make sure that all logs are created in a format which can be easily analyzed by central log management solution.
- ☐ To establish effective monitoring and alerting plan for applications.

5. Open-Source Vulnerability Assessment Tools

Vulnerabilities are the key source for malicious activities like cracking web sites and system. Vulnerability assessment enables to recognize, categorize and characterize the security flaws and holes in an application, computer systems, or in networks. The developers and system

administrators can take the advantages of vulnerability assessment methods and tools to make their applications and system safe and secure.

Vulnerability scanners and assessment tools are making the security auditing task automated and can play a great rule in finding flaws and major security risk in websites and systems. These scanners are capable of providing description and steps to countermeasure security flaws and vulnerabilities available in an application, and also, they can generate and prioritize security patches needed for the system or application.

5.1 OWASP Zed Attack Proxy (ZAP)

Zed Attack Proxy also known as ZAP is among the world's most popular security tool, which is free and open-source, that is developed by AWASP and is actively maintained by hundreds of international volunteers. ZAP is available for Windows, Unix/Linux and Mac platforms.

ZAP is very simple and easy to use tool which can be used to find wide range of web applications vulnerabilities. This tool will enable you to automatically detect security vulnerabilities of any web application, even if you are in developing and testing stage. Consequently, this tool can also be used to perform manual security tests over your web application. [6] OWASP Zed Attack Proxy provides you the ability to detect OWASP top 10 security threats that your website/application might face.

Some key features of OWASP ZAP

- Automatic Scanner
- Traditional but powerful spiders
- Fuzzer
- Web Socket Support
- Dynamic SSL certificates
- Plug-n-hack support
- Smartcard and Client Digital Certificates support
- Authentication support
- Intercepting Proxy

5.2 W3AF

W3AF is an open source, web application attack and audit framework written in Python. This is a powerful tool which can detect most of well-known and most common vulnerabilities in a web application. This tool is equipped with more than 130 plugins which will make it easier to detect the flaws and vulnerabilities. [14].

W3AF consists of two main parts, the core and plug-in. the core coordinates and manages the process and provides features which are consumed by plugin-ins, which find vulnerabilities and exploit them. It is available for Linux, Mac and windows platforms. Some key features of W3AF:

- To identify and exploit vulnerabilities, W3AF can implement web and proxy servers
- To provide Proxy support
- To use Fuzzing engine
- Provides Knowledge base

- Support File upload using multipart
- DNS cache
- HTTP Basic and Digest authentication
- Cookie handling
- HTTP response cache
- Support different logging methods like:
 - Console
 - Sent by email
 - Text, CSV, HTML and XML files

5.3 Arachni

Arachni is an open source, modular and high-performance penetration deployment environment which can detect huge number of well-known vulnerabilities. It is free, with its source code public and available for review. Arachni is multi-platform, supporting all major operating systems (All common operating systems) and distributed via portable packages which allow for instant deployment. [15] . Some key features of Arachni are as follows:

- Capable of learning from HTTP response to present better results
- REST API
- Support highly complicated web applications which make heavy use of technologies such as:
 - JavaScript
 - HTML5
 - DOM manipulation
 - AJAX.

5.4 Skip Fish

Skip fish is highly quality, high speed, ready to use and an active web security inspection tool developed by google. This tool can formulate an interactive sitemap for a website with crawl recursive in nature and probes based on dictionary. [16].

5.5 Wapiti

Wapiti is an open source command-line tool used for auditing web applications security. It scans the web pages and injecting data to check if a script is vulnerable or not. This tool supports both GET and POST HTTP attacks and is also able to detect multiple number of vulnerabilities available in cyber space. This tool is applicable for Windows, Linux and Mac. [17]. It can detect the following well-known vulnerabilities:

- Backup files disclosure
- CRLF Injection
- SQL Injection
- XSS attack
- File Inclusion
- File Disclosure
- Command execution detection
- Weak .htaccess configuration

5.6 Vega

Vega is a free open source, automated web vulnerability scanner and testing platform written in Java which offers a GUI based environment. The tool can be extended with the help of

powerful API written in JavaScript. [18] This tool is available for Linux, Mac and Windows platforms.

Table [2]: Comparative analysis of open-source assessment tools.

Name	ZAP	W3AF	Arachni	Skipfish	Wapiti	Vega
Language	Java	Python	Ruby	C	Python	Java
License	Apache	GPLv2	Apache	GPLv2	GPLv3	Apache
Platform	Windows, Mac, Linux	Windows, Mac, Linux	Windows, Mac, Linux	Linux, FreeBSD, MacOS	Windows, Mac, Linux	Windows, Mac, Linux
Authentication	Yes	Yes	Yes	No	Yes	Yes
Active	Yes	No	Yes	No	Yes	Yes
API	Yes	No	Yes	No	No	Yes
Plug-in	Yes	Yes	Yes	No	No	Yes
Scanner	Yes	Yes	Yes	Yes	Yes	Yes
Spider	Yes	Yes	Yes	Yes	Yes	Yes
Fuzzer	Yes	Yes	Yes	Yes	Yes	Yes
AJAX	Yes	No	Yes	No	No	Yes
CLI	Yes	Yes	Yes	Yes	Yes	Yes
GUI	Yes	Yes	Yes	No	No	Yes
Learning	Yes	No	Yes	No	No	No

6. Conclusion and Future Work

Threats for integrity and confidentiality of sensitive data in web applications are increasing day by day. According to OWASP Injections, Broken Authentication and Sensitive data exposure are the most frequent attacks on web applications. As the attacks are getting complex day by day, it is an important factor that companies, developers and administrators educate themselves on the serious risk that they are facing. In this document the architecture of web applications is demonstrated and also studied and evaluated the widespread security vulnerabilities which are in the OWASP top 10 list. Most of the vulnerability are preventable by securing the respective web server like keeping all libraries, plug-ins, database software, frameworks updated with latest security patches. Additionally, the developers should focus on the possible loopholes and handling methods in development time.

Making a web application secure and finding the vulnerabilities available in a web application is a tough process and need a proper planning and care. As Alzahrani et al. [5] found out that “some vulnerabilities, such as Cross-Site Scripting, and SQL injection are occurred due to design errors, while information leakage and insufficient transport layer protection are often caused by insufficient administration”. they have recommended the usage of tools to prevent these vulnerabilities. As the attackers are trying to find new methods in order to bypass the security of web applications therefore every day new vulnerabilities are added to the list. Hence, the administrators should be aware of security testing skills and techniques which may be required during the system lifecycle.

Therefore, in order to choose an appropriate tool which are affordable to most of the organizations, in this document a number of top open-source vulnerability scanners which are developed using highly secure and advanced technologies are discussed, to detect maximum number of vulnerabilities with minim cost and less effort. As the modern web applications are rapid growth, the traditional vulnerability assessment methods might not be sufficient. Therefore, as a future work researcher would like to explore and evaluate the potential use of different techniques in machine learning (ML) which can provide effective mechanisms to

identify and classify different web application vulnerabilities based on their severity.

REFERENCES

- [1] ASM Technologies Ltd., "CEBIT - Introduction to Cyber Security," ASM Technologies Ltd., 2017.
- [2] M. Curphey and R. Arawo, "Web application security assessment tools," vol. 4, no. 4, pp. 32 - 41, July-Aug 2006.
- [3] Positive Technologies, "Web application vulnerabilities: statistics for 2018," Positive Technologies, 2019.
- [4] A. Alzahrani, A. Alqazzaz, Y. Zhu, H. Fu and N. Almashfi, "Web Application Security Tools Analysis," in 2017 IEEE 3rd International Conference on Big Data Security on Cloud (BigDataSecurity), IEEE International Conference on High Performance and Smart Computing (Hpsc), and IEEE International Conference on Intelligent Data and Security (IDS), Beijing, China, 2017.
- [5] A. Alzahrani, A. Alqazzaz, H. Fu, N. Almashfi and Y. Zhu, "Web Application Security Tools Analysis," in 2017 IEEE 3rd International Conference on Big Data Security on Cloud (BigDataSecurity), Beijing, China, 2017.
- [6] Open Web Application Security Project, OWASP, "OWASP Top Ten Project," OWASP, 2 June 2019. [Online]. Available: https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project. [Accessed 7 December 2019].
- [7] S. Nagpure and S. Kurkure, "Vulnerability assessment and penetration testing of Web application," in 2017 International Conference on Computing, Communication, Control and Automation (ICCUBE), Pune, India, 2017.
- [8] K. Patel, "A Survey on Vulnerability Assessment & Penetration Testing for Secure Communication," in 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI), Tirunelveli, India, 2019.
- [9] portswigger, "XML external entity (XXE) injection," portswigger, June 2019. [Online]. Available: <https://portswigger.net/web-security/xxe>. [Accessed 19 December 2019].
- [10] D. Blazquez, "Broken Access Control," hdivsecurity, 20 November 2019. [Online]. Available: <https://hdivsecurity.com/owasp-broken-access-control>. [Accessed 21 December 2019].
- [11] D. Blazquez, "Security Misconfiguration," hdivsecurity, 20 November 2019. [Online]. Available: <https://hdivsecurity.com/owasp-security-misconfiguration>. [Accessed 21 December 2019].
- [12] acunetix, "Types of XSS: Stored XSS, Reflected XSS and DOM-based XSS," acunetix, November 2019. [Online]. Available: <https://www.acunetix.com/websitesecurity/xss/>. [Accessed December 2019].
- [13] Hack2Secure, "Insufficient Logging And Monitoring A Brief Walk Through," Hack2Secure, 27 January 2018. [Online]. Available: [Insufficient Logging And Monitoring A Brief Walk Through](#). [Accessed 21 December 2019].
- [14] N. Suteva, D. D. Zlatkovski and A. Mileva, "Evaluation and Testing of Several Free/Open Source Web Vulnerability Scanners," in The 10th Conference for Informatics and Information Technology (CIIT 2013), Macedonia, 2013.

- [15] Sarosys LLC, "Arachni Scanner," Sarosys LLC, 2017. [Online]. Available: <https://www.arachni-scanner.com/>. [Accessed 19 December 2019].
- [16] G. S, "Skipfish – Web Application Security Scanner for XSS, SQL Injection, Shell injection," Gbhackers, 1December 2018. [Online]. Available: <https://gbhackers.com/skipfish-web-application-security-scanner/>. [Accessed 22 December 2019].
- [17] Nicolas Surribas, "The web-application vulnerability scanner," Nicolas Surribas, 4 September 2019. [Online]. Available: <https://wapiti.sourceforge.io/>. [Accessed 17 December 2019].
- [18] D. Mehra, "How to start with Vega : The web securityscanner?," Knoldus, 5 February 2018. [Online]. Available: <https://blog.knoldus.com/start-vega-web-security-scanner/>. [Accessed 23 December 2019].
- [19] M. Dua and H. Singh, "Detection & prevention of website vulnerabilities: Current scenario and future trends," in 2017 2nd International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2017.
- [20] M. Dua and H. Singh, "Website Attacks: Challenges and Preventive Methodologies," in 2018 International Conference on Inventive Research in Computing Applications (ICIRCA), Coimbatore, India, 2018.
- [21] S. Tyagi and K. Kumar, "Evaluation of Static Web Vulnerability Analysis Tools," in 2018 Fifth International Conference on Parallel, Distributed and Grid Computing(PDGC), Solan Himachal Pradesh, India, 2018.
- [22] M. S. Al-Sanea and A. A. Al-Daraiseh, "Security evaluation of Saudi Arabia's websites using open source tools," in 2015 First International Conference on Anti- Cybercrime (ICACC), Riyadh, Saudi Arabia, 2015.
- [23] H.-C. Huang, Z.-K. Zhang, H.-W. Cheng and S. W. Shieh, "Web Application Security: Threats, Countermeasures, and Pitfalls," Computer, no. 10.1109/MC.2017.183, pp. 81-85, 2017.
- [24] M. Moniruzzaman, F. Chowdhury and M. S. Ferdous, "Measuring Vulnerabilities of Bangladeshi Websites," in 2019 International Conference on Electrical, Computer and Communication Engineering (ECCE), Cox'sBazar, Bangladesh, 2019.
- [25] S. Sandhya, S. Purkayastha, E. Joshua and A. Deep, "Assessment of website security by penetration testing using Wireshark," in 2017 4th International Conference on Advanced Computing and Communication Systems (ICACCS), Coimbatore, India, 2017.
- [26] K. Pranathi, S. Kranthi, A. Srisaila and P. Madhavilatha, "Attacks on Web Application Caused by Cross Site Scripting," in 2018 Second International Conference on Electronics, Communication and Aerospace Technology (ICECA), Coimbatore, India, 2018.
- [27] A. M. Efendi, Z. Ibrahim, M. A. Zawawi, F. A. Rahim, N. M. Pahari and A. Ismail, "A Survey on Deception Techniques for Securing Web Application," in 2019 IEEE 5th Intl Conference on Big Data Security on Cloud (BigDataSecurity), IEEE Intl Conference on High Performance and Smart Computing, (HPSC) and IEEE Intl Conference on Intelligent Data and Security (IDS), Washington, DC, USA, USA, 2019.
- [28] D. Yadav, D. Gupta, D. Singh, D. Kumar and U. Sharma, "Vulnerabilities and Security of Web Applications," in 2018 4th International Conference on Computing Communication and Automation (ICCCA), Greater Noida, India, India, 2018.
- [29] D. Gillman, Y. Lin, B. Maggs and R. K. Sitaraman, "Protecting Websites from Attack with Secure Delivery Networks," Computer, no. 10.1109/MC.2015.116, pp. 26-34

, 2015.

- [30] M. Alenezi and Y. Javed, "Open source web application security: A static analysis approach," in 2016 International Conference on Engineering & MIS (ICEMIS), Agadir, Morocco, 2016.
- [31] P. Navabud and C.-L. Chen, "Analyzing the Web Mail Using Wireshark," in 2018 14th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD), Huangshan, China, China, 2018.
- [32] A. Shrivastava, S. Choudhary and A. Kumar, "XSS vulnerability assessment and prevention in web application," in 2016 2nd International Conference on Next Generation Computing Technologies (NGCT), Dehradun, India, 2016.
- [33] S. Alazmi and D. C. D. Leon, "A Systematic Literature Review on the Characteristics and Effectiveness of Web Application Vulnerability Scanners," IEEE Access, vol. 10, no. 2022, pp. 33200-33219, 2022.
- [34] M. K. H. I. T. J. K. N. Q. M. A. N. C. ahanzeb Shahid, "A Comparative Study of Web Application Security Parameters: Current Trends and Future Directions," Applied Sciences , vol. 12, no. 8, p. 23, 2022.

**The effect of Gender Marketing in Brand Perception in Online Purchase : An
application in apparel clothing**

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Abstract

The brand perception among the customer plays an important role in online purchase. The customer decision relay on brand perception. A positive brand image can attract more customer and leads to increase in sales along with trust and loyalty. Brand management create a favorable impression among their target audience and maintain a competitive edge in the market. Gender plays a vital role in taking decision and this study focused towards the effects of gender influence towards Brand perception in online purchases. The data was collected from 315 samples through structural questionnaire. The collected data were analysed using SPSS 20.

Keywords: Brand, Perception, Customer satisfaction

Introduction

A retailer who is having a powerful influence on brand name and positive word of mouth creates a positive relationship with its customers. By encouraging and creating a good relationships between retails and customers create a strong brand. (Kumar and Kim, 2014).

The retailers aimed to build positive perception towards brand management it includes target segment, price, brand and web page attributes it helps to build targeted perception in their minds. Recommendations from relatives, friends etc can have a direct influence towards brand perception. Positive word of mouth can enhance a brand loyalty and brand's reputation. The retails should be cautious towards negative and unfavourable situation it may leads to risk perception in minds of the customer.

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Gender preference plays an important role in purchasing behaviour. Women interested to buy fashion, kitchen items, groceries and beauty products. The men are interested to buy technology and electronic products. In the current scenario the gender roles are changing and exploring a wide range of products and brands. This study focused towards the effects of gender influence towards Brand perception in online purchases.

Review of Literature

Leena Jenefa (2017). Online shopping is a new trend of experience and has greatly influenced to use and buy the products. It is highly influenced by the customer and it is effective and user friendly. The customers are able to adopt the latest technology using mobile phone or laptops or desktop. The digital platform provides high level security and privacy to use that product and able the customer to use it in a easy way. In the digital commerce, it is very difficult to retain the customer to buy from the same website because of lot of competitors in the platform to attract the customer needs and wants.

Research Methodology

The researchers to conduct the step-by-step process for collecting, analyzing, and interpreting data to achieve research problem. The research design is descriptive and the data were collected through primary and from Secondary sources. The primary data were collected through structural questionnaire through google forms from different customers from Tamilnadu. 315 samples were selected from Greater Chennai corporation, Chengalpattu and Kancheepuram district using convenience sampling method. The data were collected and analysed using IBM SPSS software 20. Tools like percentage analysis, chi-square, and cross tabulation were used for this study. The secondary data were collected using books, journals, and websites.

Analysis

Table 1: Respondents of Age classification

Age		Number of Respondents	Percent
Age	Less than 20 years old	44	14.0
	21 to 40 years old	148	47.0
	41 to 60 years old	103	32.7
	61 and above years	20	6.3
	Total	315	100.0

(Source: Primary Data)

Inference:

The majority of 47 percent of online customers are belong to 21 to 40 years old. 32.7 percent of online customer are belongs to 41 to 60 years old. 14 percent of the online customer belongs to less than 20 years old and only 6.3 percent of online customers belongs to 61 years and above age.

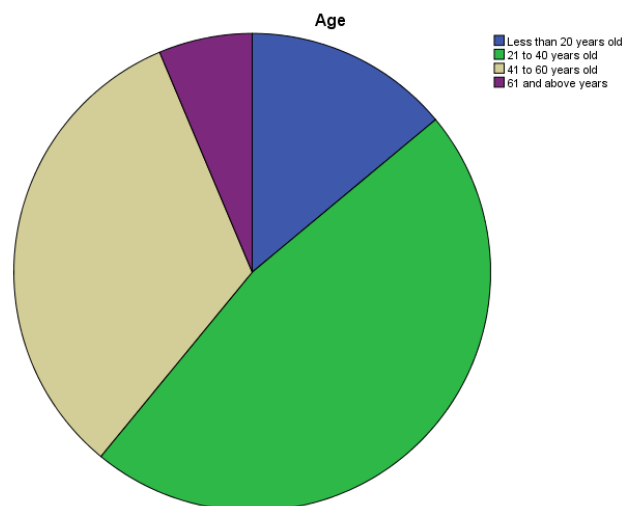


Figure 1: Respondents of Age classification

Table 2: Crosstabulation between Gender and Income

Crosstabulation between Gender and Income					
					Total
		Less than Rs 25000	Rs.25,001 to 50,000	Rs 50,001 and above	
Gender	Male	51	60	18	129
	Female	46	78	62	186
Total		97	138	80	315

(Source: Primary Data)

Among 315 respondents , the majority of the respondents income between to Rs 25,001 to 50,000. Female plays an major role in buying products through online mode. From this table it is observed that, female respondents preferred to buy products through online mode.

Hypothesis framed.

Ho: There is no association between Gender and Income of the respondents plays an important role in online purchase

H1: There is an association between Gender and Income of the respondents plays an important role in online purchase

Table 3: Association between Gender of the respondents and Income of the respondents plays an important role in Online Purchase

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.050 ^a	2	.061
Likelihood Ratio	17.838	2	.000
Linear-by-Linear Association	15.872	1	.000
N of Valid Cases	315		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 32.76.			

(Source: Computed Data)

Inference: From the above Table.3 shows that chi- square test at 5% level of significance p-value is more than the 0.05. So, null hypothesis is accepted. Hence, there is no significant difference between Age and Gender of respondents plays important role in online purchase.

Table 4: Symmetric Measures

Symmetric Measures		Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval	Pearson's R	.225	.053	4.082	.000 ^c
Ordinal by Ordinal	Spearman Correlation	.223	.053	4.052	.000 ^c
N of Valid Cases		315			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

(Source: Computed Data)

Pearson correlation coefficients measure only linear relationships. Spearman correlation coefficients measure only monotonic relationships. So a meaningful relationship can exist even if the correlation coefficients are 0. When there is no tendency for two variables to change in tandem, both Spearman's and Pearson's will be close to zero, indicating no relationship.

Table 5: Crosstabulation between Gender and Age

Gender and Age		Age				Total
		Less than 20 years old	21 to 40 years old	41 to 60 years old	61 and above years	
Gender	Male	20	72	33	4	129
	Female	24	76	70	16	186
Total		44	148	103	20	315

(Source: Primary Data)

Among 315 respondents , the majority of the respondents 148 belongs to 21 to 40 years old. Female respondents plays an major role in buying products through online mode.From this table it is observed that, female respondents preferred to buy products through online mode.

Hypothesis framed.

H₀: There is no association between Gender and Age of the respondents plays an important role in online purchase

H₂: There is an association between Gender and Age of the respondents plays an important role in online purchase

Table 6: Association between Gender of the respondents and Age of the respondents plays an important role in Online Purchase

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.009 ^a	3	.052
Likelihood Ratio	11.404	3	.010
Linear-by-Linear Association	8.037	1	.005
N of Valid Cases	315		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.19.			

(Source: Computed Data)

Inference: From the above Table.6 shows that chi- square test at 5% level of significance p-value is more than the 0.05. So, null hypothesis is accepted. Hence, there is no significant difference between Age and Income of respondents plays important role in online purchase.

Conclusion

The customer perception towards online buying behaviour having multidimensional concept that is influenced by various factors such as trust, easy way to buy, convenience, web design and product information, pricing strategy, security, and post-purchase experience. The age and gender having no significant influence towards that understanding these factors is crucial for businesses looking to improve customer satisfaction and encourage online shopping behavior. Additionally, as technology and consumer behavior continue to evolve, ongoing research in this area is essential to stay up-to-date with changing customer perceptions and preferences in online shopping.

Reference

1. Andaleeb, S. S., & Conway, C. (2006). Customer satisfaction in the restaurant industry: An examination of the transaction-specific model. *The Journal of Services Marketing*, 20(1), 3–11. <https://doi.org/10.1108/08876040610646536>
2. Ganapathi, S. Customer Satisfaction towards Electronic Shopping with Reference to Tiruchirappalli District. *International Journal of Management and Social Sciences (IJMSS)*, 8(1.1), 2018, 23-26.
3. Larsen, V., & Wright, N.D. (2017). Impact on and of the Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior: A 30-year retrospective. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, Vol. 30, 5-18.
4. Leena Jenefa, “Insights of Elite Customer: User’s Perspective Toward’s Online Shopping.” *International Journal of Recent Advances in Information Technology & Management*, Vol. 2, Issue 1, 2018, pp.14-16.
5. Leena Jenefa. “Impact of Digital Advertisement on Garments Buying Behavior.” *International Journal of Transformation in Operational & Marketing Management*, Vol. 1, Issue 1, 2017 pp.37-42.
6. Schmitt, B., (2012), “The consumer psychology of brands”, *Journal of Consumer Psychology*, 22: 7-17.
7. Stone, R. N., Gronhaug, K. (1993). “Perceived risk: Further considerations for the marketing discipline”, *European Journal of Marketing*, 27(3): 39-50

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