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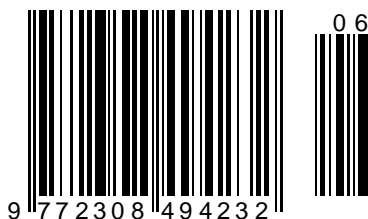
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Lapeti Sari

Riau University

Faculty of Economics and Business, Pekanbaru, Indonesia

Cut Endang Kurniasih

Riau University

Faculty of Economics and Business, Pekanbaru, Indonesia

Corresponding author

cutendang@lecturer.unri.ac.id

Rita Yani Iyan

Riau University

Faculty of Economics and Business, Pekanbaru, Indonesia

Rahmita Budiarti Ningsih

Riau University

Faculty of Economics and Business, Pekanbaru, Indonesia

Toti Indrawati

Riau University

Faculty of Economics and Business, Pekanbaru, Indonesia

DIGITAL PAYMENTS COMPARATIVE STUDY QUICK RESPONSE CODE INDONESIAN STANDARD (QRIS) QRIS ON FOOD AND BEVERAGE BUSINESS REVENUE IN PEKANBARU CITY

Abstract: This research is a comparative study identify differences in food and beverage business income before and after using QRIS and know the determinants (determination) of income food and beverage business in Pekanbaru City in terms of labor factors, use of QRIS and government policies. Data collection was carried out through interviews with owners/managers of small and micro businesses in the food and beverage sector through a purposive sampling method which was then analyzed using a different test. Wilcoxon Signed Rank Test and multiple linear regression. The results showed that there was a significant difference in the income of the food and beverage business after using QRIS compared to before using QRIS. From the variables tested, QRIS income of food and beverage business actors in Pekanbaru City is dominantly positively influenced by the use of QRIS and government policies. This means that increasing the use of QRIS and government policies on QRIS implementation can encourage an increase in business income.

Key words: Income, MSMEs, QRIS, Wilcoxon Test, Multiple Regression.

Language: English

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Introduction

Accelerating the acceleration of economic digitalization and financial inclusion in Indonesia, one

of which is realized in the form of QR code-based digital payments called the Indonesian Standard Quick Response Code (QRIS). QRIS is a QR code

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standard for payments through server-based electronic money applications, electronic wallets, or mobile banking. The payment system using QR codes is considered more practical than credit, debit and other non-cash card payments that require a swipe card. Before QRIS existed, payments tended to be exclusive because one merchant had a QR code that varied from each digital payment application (such as OVO, Gopay, Funds and so on), thus preventing consumers from paying. With a variety of QR codes to make the transaction process at merchants less efficient and of course require additional costs (Pangestu, Paul, & Pasaribu, 2022).

One of the payment methods on QRIS used in this study is Merchant Presented Mode (MPM), where QR codes are very appropriate for micro and small businesses. According to data from Bank Indonesia, the number of accepted QRIS users has expanded since it was first launched. Like in 2021, there are 11,539,000 million QRIS users from merchants, most of whom are Micro, Small and Medium Enterprises (MSMEs). In 2022 it is targeted to add 15 million new users, so it is expected that the total target of QRIS users in 2022 will be 22 million users. Not only at the national level, the use of QRIS is growing rapidly in the lower regions. One of them is in Riau Province, in Pekanbaru to be precise as a city with the most MSMEs players so that it has a huge opportunity to develop QRIS. The food and beverage industry is one of the mainstay sectors that supports Pekanbaru's economy.

In the author's observation, although cash payments are generally still preferred by the public, non-cash payments with QRIS have been used by merchants and consumers in Pekanbaru, and have even become a way of life in transactions (Amira & Afrizal, 2021). Apart from that, regional financial transactions such as payment of taxes and fees, Pekanbaru is the only region of Riau that has used QRIS. This indicates that the readiness for digital transformation using QRIS is very well received by all parties. It is remembered in implementation of QRIS standardization for areas like Pekanbaru City it tends to be easier to do.

Amount significant QRIS transactions carried out between merchants and consumers in Pekanbaru means that it can have an impact on increasing the amount of MSMEs income in Pekanbaru. Some research (Sekarsari, Indrawati, & Subarno, 2021; Sihaloho, Ramadani, & Rahmayanti, 2020) said that the QRIS contactless payment system is able to provide many advantages for MSMEs such as helping online sales so that income increases, and vice versa. Ronabiya et al. (2021) instead revealed that QRIS could not increase the income of MSMEs during the Covid-19 pandemic. Income from the MSMEs sector is still interesting and important to study, because 61% of GDP comes from MSMEs and this sector holds great economic potential for Indonesia.

Research on the QRIS comparative study was carried out by considering several reasons because the non-cash payment method allows for an increase in operating income after using QRIS, considering that one QR code is for all bank and e-wallet payment applications. The limited literature discussing QRIS at merchants is an urgency for conducting this research (Aisa, Aulia, Dalianti, & Handa, 2022; Carera, Gunawan, & Fauzi, 2022; Natalina, Zunaidi, & Rahmah, 2021; Nurhapsari & Sholihah, 2022). Furthermore, the existence of labor factors, the use of QRIS and government policies are expected to be able to strengthen the results of research conducted to identify the determination of income levels. Previous research only made income comparisons (Carera et al., 2022). Therefore, the results of this study will conclude how the level of income of food and beverage businesses in Pekanbaru City before and after using QRIS and describe the influence of factors related to income of food and beverage businesses using QRIS. The results of this research are expected to provide recommendations for Bank Indonesia regarding the implementation of QRIS as a non-cash payment interface (lesson learned).

LITERATURE REVIEW

Micro, Small and Medium Enterprises (MSMEs)

The definition of MSMEs according to Law Number 20 of 2008 is as follows (Republic of Indonesia, 2008):

a. Micro Enterprises are production businesses owned by individuals and/or individual business entities wherein the law has set standards for micro-enterprises, namely having a maximum net worth of Rp. 50,000,000, - excluding land and buildings used as business premises. Or have annual sales of not more than Rp. 300,000,000.

b. Small Business is an independent productive economic enterprise carried out by individuals and or business entities that are not directly owned, controlled, by a part of a subsidiary or branch of a medium or large business. Net worth more than Rp. 50,000,000, - maximum Rp. 500,000,000, - excluding land and buildings for business premises. Or the amount of annual income is more than Rp. 300,000,000, - maximum Rp. 2,500,000,000,-.

c. Medium Enterprises are productive economic enterprises that stand alone which are carried out by individuals and or business entities that are not directly owned, controlled, by a part of a subsidiary or branch of a company that has a small business standard. Has a net worth of more than Rp. 500,000,000.- up to Rp.10,000,000,000.- excluding land and buildings for business premises. Or annual income of more than Rp. 2,500,000,000.- to 50,000,000,000.

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Quick Response Code Indonesian Standard (QRIS)

QRIS is a unification of various types of QR from various Payment System Service Providers (PJSP) using the QR Code developed by Bank Indonesia as the payment system regulator in Indonesia in collaboration with a Indonesian Payment System Association (ASPI). Use of QRIS is mandatory for every QR-based Payment System Service Providers (PJSP) have been regulated in PADG No.21/18/2019 concerning Implementation of QRIS International Standards for Payments.

Income

Operating income in this study is also called Total Revenue (TR), which is the amount of income received by business owners/managers as the product of the number of units sold and the price each unit (Mankiw, 2006). Total expenses are all costs incurred in business activities. Total income is the total revenue minus costs in a business activity. The amount of income/profit is obtained from:

$$\pi = TR - TC$$

where: π = Income; TR = Total receipts; TC = Total cost (TFC+TVC).

Criteria:

- If total revenue > total costs, then the business is profitable.
- If total revenue = total costs, then the business is at the breakeven point.
- If the total revenue < total costs, then the business is a loss.

Previous Research

The application of QRIS as a digital payment interface is known through the following research (Lomi & Darma, 2022; Sekarsari et al., 2021; Sihaloho et al., 2020) who found obstacles and obstacles in implementing QRIS in various regions in Indonesia. Other research outlines the factors that influence interest in using QRIS such as: Natalina, Zunaidi, & Rahmah (2021) revealed that 53% of MSMEs in Kediri City expressed an interest in using QRIS for their trade transactions. Rahman & Supriyanto, (2022) shows that knowledge, benefits and risks positively influence students' interest in using QRIS. Almost the same Nurhapsari & Sholihah (2022) found that product knowledge, perceived usability, and perceived ease of use had a positive and significant effect on the intention to use QRIS. Then the perception of risk negatively and significantly affects the intention to use QRIS.

In another study, Carera, Gunawan, & Fauzi (2022) comparing sales turnover for MSMEs before and after using QRIS in Purwokerto City using the Wilcoxon Test technique. The results of this study indicate that there are differences in sales turnover before and after using QRIS.

It is also important to analyze the determinants of MSMEs income, Hasanah, Kholifah, & Alamsyah (2020) include the influence of technology on MSMEs income in Purbalingga Regency. The results of the study show that there is a significant influence between technology and the income of MSMEs owners, Asisa, Aulia, Dalianti, & Handa (2022) observing the performance of MSMEs in Makassar City through the convenience of digital payments. These findings show that digital payments can positively influence MSMEs performance.

On the contrary, Amelia (2019) investigated the role of financial technology on the income of MSMEs in the fashion sector in Pangkep Regency. The results of his research found that the minimal role of financial technology in increasing MSMEs income. These results are in line with research Ekasari & Pardi (2021) who found that labor and technology factors had no significant effect on business income.

RESEARCH METHODS

This type of research includes a comparative quantitative study conducted with the aim of testing and analyzing the comparison of business income between before and after using QRIS in the food and beverage sector and the factors that influence income. The research data source is in the form of primary data collected through in-depth interviews using questionnaires to the owners/managers of food and beverage micro-small businesses in Pekanbaru City. Supporting data was obtained through literature studies from journals and publications of Bank Indonesia data.

The selection of respondents was carried out by purposive sampling with the consideration that the respondents were owners/managers of small and micro food and beverage businesses that have a QRIS barcode on their business payment system and include young people who are more adaptive in making transactions with the help of gadgets. Based on the sampling conducted, a sample of 49 respondents was obtained working in the culinary sector.

This research method is a comparative study carried out with the following stages:

1. Perform normality test using Shapiro-Wilk to see whether the residuals produced by a regression model are normally distributed or not. According to Shapiro, Wilk, & Chen (1968) if the data is not more than 50 samples it is recommended to use the Shapiro-Wilk test. So in this study will use the Shapiro-Wilk test to determine the normality of the data.

2. Conduct a significance test with a different test analysis (t-test) to test whether there is an increase in business income between before and after using QRIS in the food and beverage sector. The different tests used are: the parametric Paired Samples T Test if the data is normally distributed and the non-parametric Wilcoxon Signed Rank Test if the data is not normal.

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Furthermore, this study also uses multiple regression analysis to build a better model in predicting the dependent variable. The equation model in this study uses a Likert scale (score 1-5) to measure respondents' perceptions of the phenomenon under study. This study detects the factors that

influence the income of food and beverage businesses that use the QRIS application from three predictors, including labor, use of QRIS and government policies. Therefore, the model equation built for this study is as follows:

$$\text{REVENUE} = \beta_0 + \beta_1 \text{LABOR} + \beta_2 \text{QRIS USE} + \beta_3 \text{GOVERNMENT POLICIES} + e \dots \dots \dots (1)$$

RESEARCH RESULT

Test result

1. Normality test
- 2.

Table 1. Normality Test Using Shapiro-Wilk Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Before QRIS	.177	49	.001	.763	49	.000
After QRIS	.170	49	.001	.795	49	.000

a. Lilliefors Significance Correction

Source: Results of Data Processing, SPSS (2022).

Based on the test results contained in Table 1. obtained Asymp. Sig (2-tailed) for food and beverage business income both before and after using QRIS is 0.000 <0.05, so the data is classified as abnormal

distribution. Because it is not normally distributed, a comparative test is carried out using the Wilcoxon test.

3. Wilcoxon Signed Rank Test Comparative Test

Table 2. Wilcoxon Signed Rank Test results Ranks

	N	MeanRanking	Sum of Ranks
After QRIS - Before QRIS			
Negative Ranks	0a	.00	.00
Positive Ranks	30b	15.50	465.00
ties	19c		
Total	49		

- a. After QRIS < Before QRIS
- b. After QRIS > Before QRIS
- c. After QRIS = Before QRIS

Source: Results of Data Processing, SPSS (2022).

Based on Table 2, it shows that the Positive Ranks value in income after using QRIS and before using QRIS is 30, which means that there are 30 food and beverage businesses that have experienced an increase in income after using QRIS compared to before using QRIS. The Negative Ranks value is 0, which means that none of the culinary businesses have

experienced a decrease in income after using QRIS compared to before using QRIS. The Ties value is 19, which means that there are 19 food and beverage businesses that do not experience either an increase or decrease in income or remain stable before and after using QRIS.

Table 3. Statistical Test Results Statistics test

	After QRIS - Before QRIS
Z	-4.793b
asympt. Sig. (2-tailed)	.000

- a. Wilcoxon Signed Ranks Test
- b. Based on negative ranks.

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Source: Results of Data Processing, SPSS (2022).

Based on the test results in Table 3, the Asym value is obtained. Sig (2-tailed) $0.000 < 0.05$ means H_0 is rejected and H_1 is accepted or in other words there is a significant difference in food and beverage business income when using QRIS compared to before using QRIS in Pekanbaru City, Indonesia. This result is in line with the findings Carera, Gunawan, & Fauzi (2022) who uses the same method that the use of QRIS in MSMEs provides a greater increase in sales turnover, which is then accompanied by an increase in operating profit.

4. Testing the Determinant Hypothesis of Business Income in Using QRIS

The estimation results of multiple linear regression to find out the determinants of income in a food and beverage business using QRIS show that the independent variables used in this study, namely labor, use of QRIS and government policies have a positive influence, but with different probabilities. The use of QRIS has a positive and significant effect at an error rate of 10%, government policies have a positive and significant effect at an error rate of 5% while the labor variable has no significant effect. Thus it can be interpreted that when there is an increase in the use of QRIS and government policies towards QRIS, it will increase the income of food and beverage businesses in Pekanbaru City.

Table 4. Estimation Result of Operating Income Determinant Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	std. Error	Betas		
1 (Constant)	.525	.901		.583	.563
Labor	.046	.238	.028	.192	.849
Use of QRIS	.457	.236	.318	1.936	.059
Government policy	.347	.154	.317	2.260	.029
R square	.307	F statistics	6660		
Adjusted R square	.261	F sign	.001		

a. Dependent Variable: Income

Source: Results of Data Processing, SPSS (2022).

Discussion

Based on the results of data analysis, it can be described that there is a significant difference in income received by food and beverage businesses in Pekanbaru City before and after using QRIS, which is reflected in the difference in average income of Rp. 1,561,224.-. This means that after using QRIS, the income of the food and beverage business has increased.

These results indicate agreement with the factors tested that affect income. The results of the regression estimation show that the dependent variable, namely income, is influenced by the independent variables, namely the use of QRIS and government policies, but not affected by labor. Based on the analysis results obtained, the coefficient value of the use of QRIS is positive and significant at a 10% error rate of 0.457. This can be interpreted that increasing acceptance of the use of QRIS as a payment method at merchants will increase business income.

The use of QRIS referred to in this study is the perception of respondents while using QRIS which is seen from the convenience, benefits, advantages and

their satisfaction. From the results of field interviews regarding the use of QRIS, the majority of food and beverage businesses use QRIS to keep abreast of developments in technology and information, which currently uses a non-cash payment system. This encourages the desire of business actors to have one barcode that is integrated with all payment applications. The use of QRIS was felt by respondents to help complete payment transactions more quickly, easy to use, safe and practical. In addition, merchants also realize that QRIS can improve sales performance and productivity (Nurhapsari & Sholihah, 2022).

In research Sihaloho et al. (2020) increase in revenue that occurs around 5-10% in a day for some traders. There are traders who experience an increase in income on Saturday and Sunday when using QRIS. This increase in revenue will increase financial inclusion for MSMEs traders and the country's digital economy. These results are consistent with the findings Hasanah, Kholifah, & Alamsyah (2020) and Asisa, Aulia, Dalianti, & Handa (2022) that there is a significant influence between technology and MSMEs income (performance). But contrary to research

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Amelia (2019) who found that the minimal role of financial technology in increasing MSMEs income was due to the fact that there were still many sales that applied traditional payment methods.

In the labor variable, the coefficient obtained from the regression results is 0.46 and has an insignificant value. Insignificant results indicate that the workforce has not been able to increase the income of food and beverage businesses that use QRIS. This can happen because the number of workers is still not too many, around 1-3 people. In line with the results of the study Ekasari & Pardi (2021) Whether or not the number of workers is large does not affect the smooth running of the production process because businesses can still be managed by business owners who use technology. If seen from the level of education possessed by the workforce, it is considered that it does not affect the income of MSMEs, this was revealed by Hasana et al. (2020) that in running a business an MSMEs actor does not fully use the knowledge obtained from school or lectures. MSMEs actors often use the results of the learning process outside of formal education and experience to run their business. Likewise, the results of this study where the ability and knowledge of business actors to use QRIS are mostly obtained from social media/internet.

For government policy variables have a positive and significant influence on business income of 0.347. This government policy factor can be interpreted that the existence of government policies that encourage digitalization acceleration and streng then the payment system will increase business income using QRIS. This is shown by Bank Indonesia's commitment to expanding QRIS since it was first launched in 2020 to 5.8 million merchants, in 2021 it will reach 12 million and in August 2022 there will be 20 million merchants using QRIS throughout Indonesia. The increasing use of QRIS also increases the volume of QRIS transactions integrated services reached IDR 9.66 trillion in August 2022.

Despite significant growth, the presence of QRIS in implementation is still not perfect. Several respondents in this study still encountered obstacles in using QRIS such as:

- Technical constraints are power outages and the absence of a stable network when receiving payments
- The application often crashes (errors)

- Problems with disbursing funds that cannot be done on Saturday and Sunday. The balance cannot be taken for less than IDR 20,000

- Administrative fee deductions that are too large per month can reduce profits, there by burdening business owners

- Experiencing fraud on the part of consumers and consumers rarely use QRIS.

Meanwhile, other respondents provided input to the authorities so that they could promote businesses registered in the QRIS and the socialization of the use of the QRIS needed to be expanded.

Based on the processing results above, there is an influence of labor, use of QRIS and government policies on the income of food and beverage businesses that use QRIS of 30.7%. This proves that the three variables can influence business actors in increasing their income, while the remaining 69.3% is influenced by other factors.

Conclusion

This study uses Wilcoxon Signed Rank Test analysis and multiple regression as the method of analysis. The number of food and beverage businesses that became the object of this study were 49 businesses using QRIS in Pekanbaru City. Based on the analysis tests and discussions that have been carried out, it can be concluded that:

- The results of the Wilcoxon Signed Rank Test showed that there was a significant difference in the revenue of the food and beverage business before and after using QRIS.

- The results of multiple linear regression estimates show that the factors that influence the income of food and beverage businesses that use QRIS are the use of QRIS and government policies.

Suggestion

The suggestions that can be given by researchers are as follows:

- Business actors are advised to use QRIS more optimally asnon-cash payment methods that can increase business revenue.

- Government policy has a major influence on the income of businesses that use QRIS, this can be utilized by the government and related institutions to increase the role of socialization and appeals to the public and business actors to use QRIS.

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Article



Faizah Hamzah

University of Riau

Department of Agricultural Technology, Faculty of Agriculture,

Corresponding Author

faizah.hamzah@lecturer.unri.ac.id

Nirwana Hamzah

University of Riau

Department of Chemical Engineering, Faculty of Engineering

ANTIOXIDANT ACTIVITY AND ORGANOLEPTIC LEAF TEA *Litsea cubeba* PERS

Abstract: *Litsea cubeba* leaf has been used traditionally to treat a variety of diseases, because *Litsea cubeba* leaf contains antioxidant compounds. The research objective to be achieved is to measure and analyze the activity of antioxidants and organoleptic properties of *Litsea cubeba* leaf tea by variations in drying time 30; 60; 90; 120 and 150 minutes. Measurement of antioxidant activity using US-VIS spectrophotometry method (λ 518 nm), while the organoleptic: taste; color, scent and appearance. The result of studies that a treatment time of drying effect on antioxidant activity of *Litsea cubeba* leaf tea. *Litsea cubeba* leaf drying conditions at 50°C with a temperature of 150 minutes gives the highest level of antioxidant activity and the lowest EC50, value, but it has the lowest organoleptic flavour.

Key words: *Litsea cubeba* leaf tea; antioxidants; drying; organoleptic.

Language: English

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Introduction

The *Litsea cubeba* plant comes from the Latin word *Litsea Papandayan* which means spicy sweet and sour bag. *Litsea* leaves are widely used as anti-microbial drugs including herbal medicines and can also be added to food and drinks, especially in the form of anti-oxidant ingredients.

The content of class compounds in *Litsea cubeba* leaves include steroids, terpenoids, flavonoids, alkaloids and tannins. All classes of flavonoid compounds mostly function as antioxidants for antimicrobial diseases, one of which is anti-viral diseases including cancer, photosynthetic regulators and body regulators.

In Riau Province, *Litsea cubeba* leaves are commonly used as herbal medicine to treat viral diseases, namely cancer by drinking boiled water from *Litsea cubeba* leaves. The boiled water of *Litsea*

cubeba leaves can cause heat in the body as well as the function of chemotherapy, but the boiled water of *Litsea cubeba* leaves is limited to killing abnormal cells (cancer) and releasing normal cells to live/grow. The effects of chemotherapy are slightly different where this chemotherapy treatment not only kills abnormal cells (cancer) but normal cells also die.

Boiled water from fresh *Litsea cubeba* leaves has long been made and can also be used as an herbal medicine for cancer, but this form of leaf tea has not been widely used by the public because so far *Litsea cubeba* leaf extract has been included in mixed tea products in green tea powder. Because of that, it is necessary to analyze the antioxidants in *Litsea cubeba* tea.

The basic drying time in the process of making this herbal tea refers to or is guided by other herbal teas including mangosteen peel, soursop and celery

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leaves which have proven superiority with a drying time of 150 minutes at most, 30 minutes at the fastest, for that it is taken 30 minutes to 150 minutes.

This drying time also determines the quantity and quality of herbal teas from all observation tests on the quality of tea being made into drinks that are efficacious for our bodies in addition to hard-to-find class compounds from the results of research on the presence of secondary metabolic group compounds (steroids/terpenoids, alkaloids, flavonoids and tannins). Furthermore, to recognize the potential of *Litsea cubeba* leaves in the presence of active compounds attached to the body of the leaves, they are efficacious as functional drinks that can be used as herbal medicines for viral diseases (cancer).

MATERIALS AND METHODS

Material

Litsea cubeba leaves were taken starting from the fifth leaf to the third leaf from the base of the stem in an industrial *Litsea cubeba* tree, these leaves were taken in gardens in the Papandayan mountain forest, West Java as samples that grew a lot in that location, while in Kampar, Riau they did not get too much type/species cubeba, but indica species (*Litsea indica*) is also made as herbal medicine, Mg powder, concentrated HCl, amyl alcohol, 0.07 mM diphenyl picryl-hydrazyl (DPPH) solution and methanol pa

Tool

Baking sheet, oven, UV-VIS spectrophotometer, mortar, stamper, filter paper, funnel, druppel plate separator, small glass, small spoon and questionnaire paper.

Research procedure

First of all, this research procedure included sample preparation, preparation of *Litsea cubeba* leaf tea, preparation of *Litsea cubeba* tea solution, water content test, qualitative test of phenolic compounds from the flavonoid group, quantitative test of antioxidant activity (DPPH and EC50 methods) and test of organoleptic properties (scoring method).

1. Sample Preparation

Litsea leaves were obtained from the West Java area of Mount Papandayan (tourist forest) taken in the morning at 06.00 WIB, then the *Litsea cubeba* leaves were separated from the branches.

2. The process of making *Litsea cubeba* leaf tea

Litsea cubeba leaves are washed and sorted. *Litsea cubeba* leaves are carried out through a withering process at 70 °C for 4 minutes, cooled for 5 minutes and then rolled. After being rolled, the drying process is carried out at 50 °C with a drying time of 30; 60; 90; 120 and 150 minutes, finally tested for water content.

3. The process of making *Litsea cubeba* leaf tea solution

Litsea cubeba leaf powder, weighed 100 mg and added 10 ml of hot water. Hot water, then put in a water bath and brought to a boil.

4. Antioxidant Activity Test

a. Qualitative Test of Phenolic Compounds

Take 5 ml of *Litsea cubeba* leaf tea drink, put it in a test tube, then add 5 drops of 5% FeCl₃ solution and shake until smooth. The formation of blackish blue color after the addition of 5% FeCl₃ indicated the presence of phenolic group compounds.

b. Qualitative Test of Compounds of the Flavonoid Group

Take 5 ml of *Litsea cubeba* leaf tea and put it in a test tube. Then added Mg powder. 1 ml concentrated HCl and 5 ml amyl alcohol and shaken until smooth. The formation of orange color in the solution indicates the presence of flavonoids.

c. Qualitative Antioxidant Activity Test (test the antioxidant activity of the DPPH method, Yhunkun, 2018)

Antioxidant activity was carried out by taking 4 ml of 0.07 mM DPPH solution, then putting it into a test tube and adding 50 µl of *Litsea cubeba* leaf tea solution and homogenizing with a vortex, DPPH solution was used as a control without the addition of the test solution. Then the solution was measured with a UV-VIS spectrophotometer at a wavelength of 517 nm and operating time of 40 minutes.

d. Antioxidant Activity Test with Effective Concentration (EC50) according to Yhunkun (2018)

Antioxidant activity is the value of efficient concentration 50 (EC50), namely the concentration of an antioxidant substance can cause 50% of DPPH to lose its free radical character or the concentration of an antioxidant substance that provides % free radical inhibition 50% Substances that have high antioxidant activity will have a value of EC50 low (Momerinix, 2018).

5. Test the Organoleptic Properties with the Scoring Method

Organoleptic testing included taste, color, aroma and appearance. The panelists gave an assessment in the form of scores on the organoleptic test blocks for *Litsea cubeba* tea and *Litsea cubeba* tea drinks.

RESEARCH DESIGN

The research design was a completely randomized design (CRD) with a single factor, because one level of treatment was carried out. The independent variable was the drying time of *Litsea cubeba* tea leaves and the dependent variable was the antioxidant activity and organoleptic properties of *Litsea cubeba* leaf tea. The number of treatments was determined by 5 treatments (P) and each treatment was repeated 4 times (U). Determination of replicates using the error formula (P-1) x (U-1)-(5-1) x (4-1) 4x3 12. If in this study there were 5 treatments and 4 repetitions, the total error = 12.

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The data obtained from the measurement of antioxidant activity were analyzed using the ANOVA (Analysis of Variant) test for effect, while the data from the organoleptic tests were tabulated and analyzed using the Friedman test.

RESULTS AND DISCUSSION

The manufacture of Litsea cubeba leaf tea is based on Rangga's research (2018). The tea leaves were withered at 70°C for 4 minutes. The withering operating conditions were guided as the optimum conditions for withering Litsea cubeba leaves in this

study. The process of drying Litsea cubeba leaves, drying 30, 60, 90, 120 and 150 minutes. Tests carried out by the resulting Litsea cubeba leaf tea products included testing for water content, testing for antioxidant activity, and organoleptic properties.

Water content

Moisture content has an important role in determining the characteristics and duration of food storage. The results of the analysis of the water content of Litsea cubeba leaf tea with the long drying treatment can be seen in Figure 1.

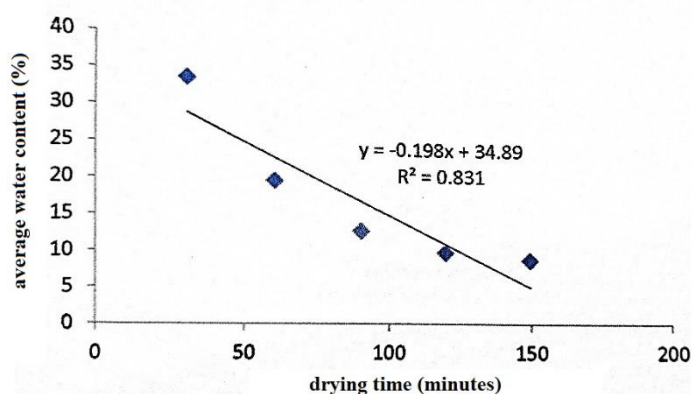


Figure 1. Water content of Litsea cubeba leaf tea

Figure 1 shows that the highest water content was in the 30-minute drying treatment, amounting to 34.15% and the lowest water content was found in the 150-minute drying treatment, amounting to 8.15%. The results of the ANOVA statistical test using 0.05 obtained data at a significant level of p-value: 0.00 where the p-value <0.01, it can be concluded that drying time has a very significant effect on moisture content.

The water composition of foodstuffs, such as free water and bound water, can affect the rate or duration of drying of food ingredients. Bound water is

water contained in foodstuffs. Free water is water that is physically bound in a network of material matrices such as membranes, capillaries, fibers and others, essentially free from components in plant and animal cell materials, in other words outside of cell bonds (Warenok, 2018).

Antioxidant Activity Test

a. Qualitative Test of Phenolic Compounds

The results of the qualitative test of Litsea cubeba leaf tea phenolic compounds can be seen in Table 1 below.

Table 1. The results of the qualitative test of the phenolic group of Litsea cubeba leaf tea Pers.

Drying Time	Phenolic Compounds
30 minutes	+
60 minutes	+
90 minutes	+
120 minutes	+
150 minutes	+

Notes: + Litsea cubeba leaf tea samples were positive for phenolic group compounds

Table 1 states that the results obtained positively contain phenolic group compounds in the opinion of Rahman (2018) explaining that FeCl₃ reacts with phenolic groups to form green, purple to black complexes, the presence of these colors is a sign of the presence of phenolic group compounds in the plant material.

b. Qualitative Test of Compounds of the Flavonoid Group.

The results of the qualitative test of compounds belonging to the flavonoid group can be seen in Table 2 below.

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Table 2. The results of the qualitative test of compounds belonging to the class of flavonoids in tea leaf Litsea cubeba Pers.

Drying Time	Flavonoid Compounds
30 minutes	+
60 minutes	+
90 minutes	+
120 minutes	+
150 minutes	+

Note: + Litsea cubeba leaf tea samples were positive for flavonoid compounds

Table 2 can be seen that the results obtained were positive indicating that all the drying time treatments contained compounds of the flavonoid class. This is in accordance with the opinion of Robinson and Radiatum (2018), compounds belonging to the flavonoid group react with magnesium powder and the help of concentrated HCl to form complexes with green to orange flavonoid groups. The appearance of

an orange color from the Mg flavonoid complex indicates the presence of this group of compounds.

c. Antioxidant Qualitative Test

1. Antioxidant qualitative test with the DPPH method

The results of the antioxidant analysis of Litsea cubeba leaf tea with the DPPH method can be seen in Figure 2.

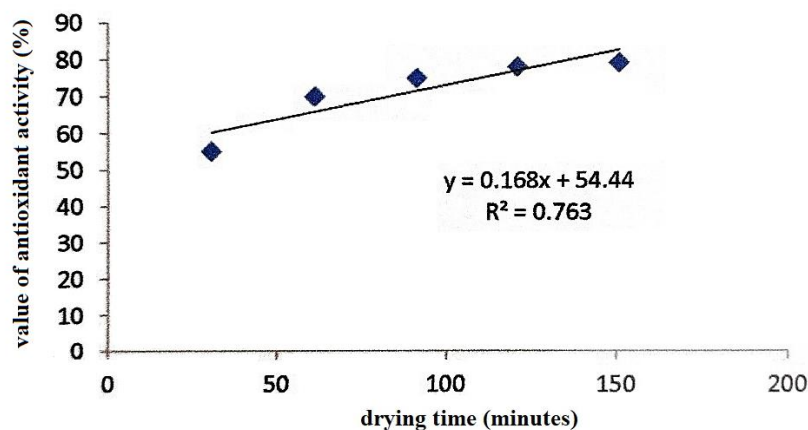


Figure 2. Antioxidant activity

From Figure 2 it is found that the longer the drying time the higher the antioxidant activity. The highest antioxidant activity was found in Litsea cubeba leaf tea samples with 150 minutes of drying time, which was 76.10% and the lowest was 53.5% in 30 minutes of drying. The results of the ANOVA test showed a p-value of 0.00 where a p-value <0.01 showed that drying time had a very significant effect on antioxidant activity. This condition is due to the drying process resulting in an increase in the active substances contained in the tea leaves (Weinght,

2018). This is also in the opinion of Winarno (2018) that the drying process has an effect and increases the active substances contained in the composition of tea leaves.

2. Antioxidant Activity Test with an Effective Concentration Value of 50 (EC50)

The results of the antioxidant analysis of Litsea cubeba leaf tea with the EC50 value can be seen in Figure 3.

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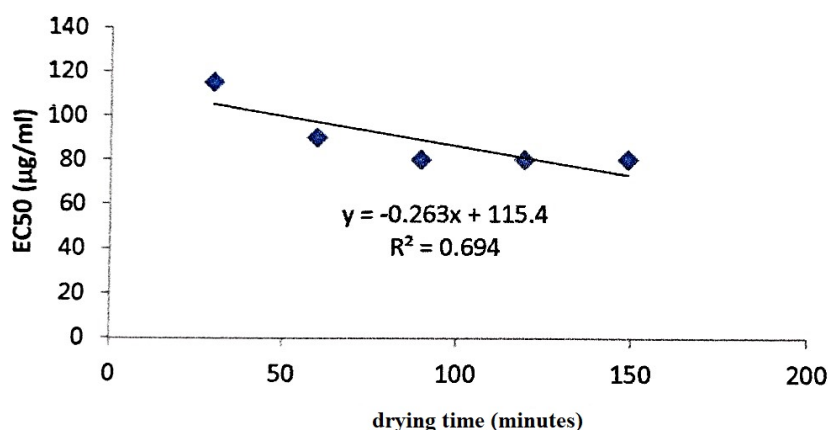


Figure 3. EC50 value of Litsea cubeba leaf tea

Figure 3 shows that the longer the drying time, the lower the EC50 value, so that the lowest value was 82.20 µg/ml for 150 minutes of drying and the highest was 117.90 µg/ml for 30 minutes of drying. The results of the ANOVA test yielded a p-value of 0.00 where the p-value <0.01 obtained that the drying time had a very significant effect on the EC50 value

The EC50 value is used to express the antioxidant activity of a test substance using the DPPH free radical immersion method. The EC50 value is inversely proportional to the ability of the compound to act as an antioxidant. The smaller the

EC50 value, the stronger the antioxidant power (Molyneus, 2018).

Organoleptic Properties

a) Litsea cubeba leaf tea organoleptic

Texture

The texture of good tea is rough where the drying process of tea leaves can cause changes in pectic acid. Pectic acid will dry out and form a kind of varnish so that the surface of the tea becomes dry and rough. The results of the average panelist study on the texture of Litsea cubeba leaf tea can be seen in Figure 4.

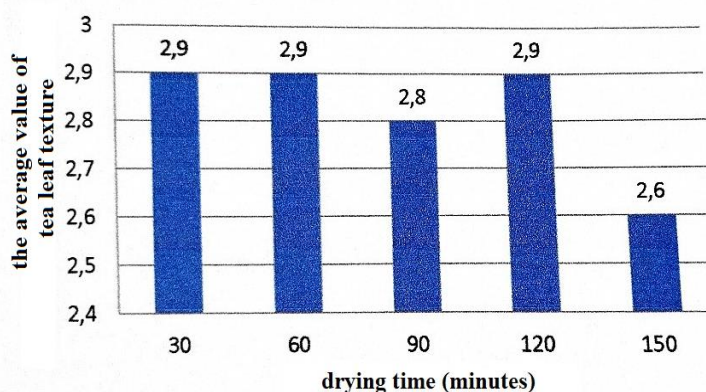


Figure 4. The results of the panelist's assessment of the color of Litsea cubeba leaf tea

The highest organoleptic value for tea texture was obtained by drying time of 30, 60 and 120 minutes, which was 2.9, while the lowest value was found for tea with a drying time of 150 minutes, which was 2.7. Friedman test results using P-0.05 obtained significant data level p-value 0.46 where p-value > 0.05 stated that there was no effect of drying time on the texture of Litsea cubeba leaf tea

Aroma

According to the SNI 03-3836-2012 standard, a good aroma for Litsea leaf tea is normal, namely the distinctive aroma of tea. According to Cahyudi (2018) states that the compounds that make up the aroma of tea mainly consist of volatile and reducing essential oils so that they can produce a fragrant aroma in tea.

The results of the panelists' average research on the aroma of Litsea cubeba leaf tea can be seen in Figure 5.

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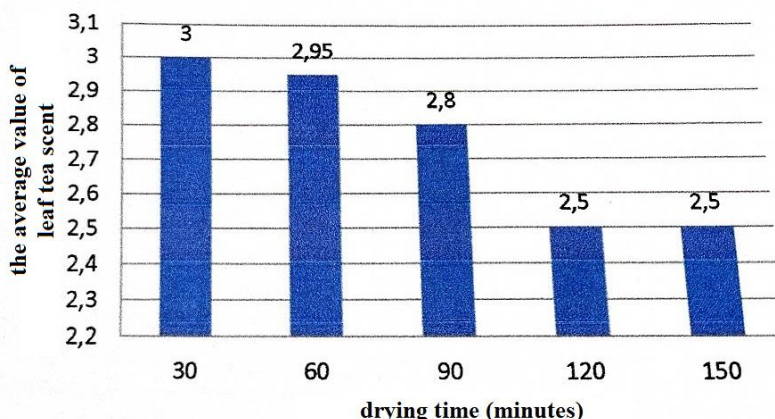


Figure 5. The results of the panelists' assessment of the aroma of Litsea cubeba leaf tea

The highest aroma value was found in the tea sample with 30 minutes of drying time, equal to 3, while the lowest aroma value was found in the tea sample with 150 minutes of drying time, amounting to 2.5. Friedman's test results obtained 0.00 (p-value <0.01) so that it can be obtained that there is a very significant effect of drying time on the aroma of Litsea cubeba leaf tea.

Color

According to the SNI 03-3836-2012 standard, the color of good tea is normal, namely brownish green. The drying process causes the green color of chlorophyll in the leaves to oxidize to brown. This is due to a browning event (Handani, 2018).

The results of the panelists' average assessment of the color of Litsea cubeba leaf tea can be seen in Figure 6.

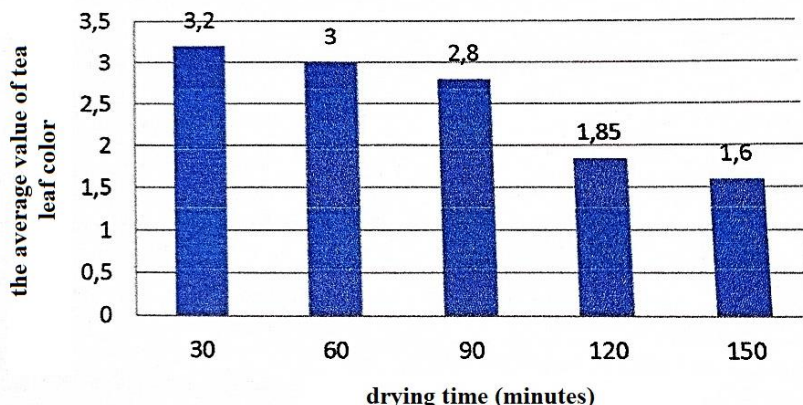


Figure 6. The results of the panelist's assessment of the color of Litsea cubeba leaf tea

The highest color value was found in the tea sample with 30 minutes of drying time, at 3.2. The lowest was found in the tea sample with a drying time of 150 minutes at 1.6.

The Friedman test results obtained a p-value of 0.00 where the p-value <0.01 so that it was obtained that there was a very significant effect of drying time on the color of Litsea cubeba leaf tea.

Flavor

According to the SNI 01-3143-1992 standard, the good taste of Litsea cubeba leaf tea is normal, namely the astringent taste. Catechins are tannins which do not have tanning properties and collect proteins to produce an astringent taste.

The average results of the panelists' assessment of the Litsea cubeba leaf tea taste problem can be seen in Figure 7.

b) Litsea cubeba leaf tea organoleptic

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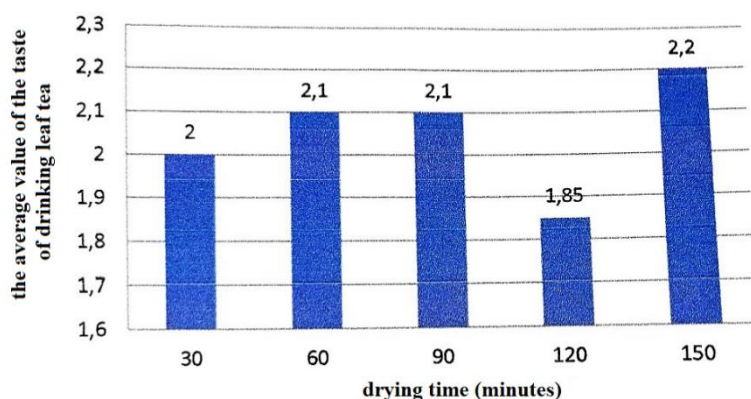


Figure 7. The results of the panelist's assessment of the taste of Litsea cubeba leaf tea

The highest taste value was found in the 150-minute drying sample, which was 2.5, while the lowest value was found in the 30-minute drying sample, which was 2. The Friedman test results used $p < 0.05$ data obtained a significant level of p -value 0.46 where p -value > 0.05 obtained no effect of drying time on the taste of Litsea cubeba leaf tea.

Aroma

According to the SNI 01-3143-1992 standard, the aroma of a good Litsea cubeba leaf tea drink is normal, namely fragrant. The drying process of gallic acid will be oxidized into thearubigin (TR) compound, this compound has an effect on fragrant aroma (Kim et al., 2018).

The results of the panelists' average assessment of the aroma of Litsea cubeba leaf tea can be seen in Figure 8.

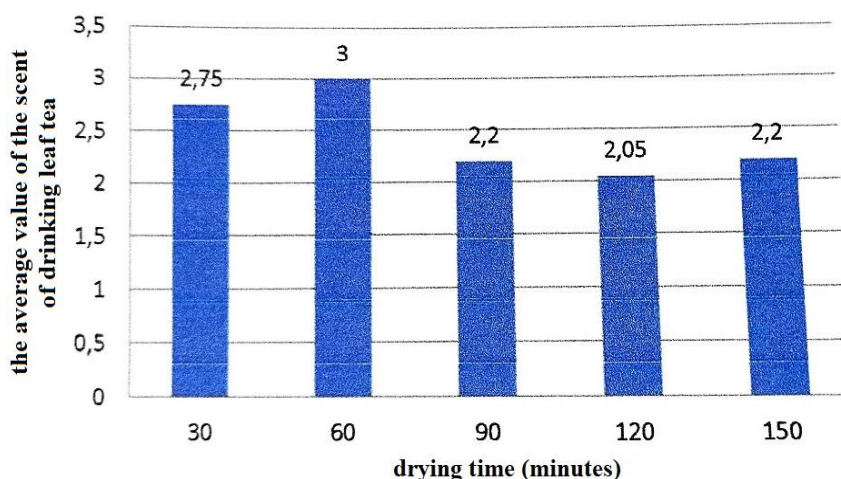


Figure 8. The results of the panelist's assessment of the aroma of Litsea cubeba leaf tea

The highest aroma value of Litsea cubeba leaf tea was obtained at 60 minutes of drying time, at 3.0, while the lowest value was found at 120 minutes of drying time, at 2.05. The Friedman test results obtained a p -value of 0.00 where a p -value < 0.01 obtained a very significant effect of drying time on the aroma of Litsea cubeba leaf tea.

Color

According to the SNI 01-3143-1992 standard, the color of a good Litsea cubeba leaf tea drink is normal, namely bright.

The results of the panelist average research on the color of the Litsea cubeba leaf tea drink can be seen in Figure 9.

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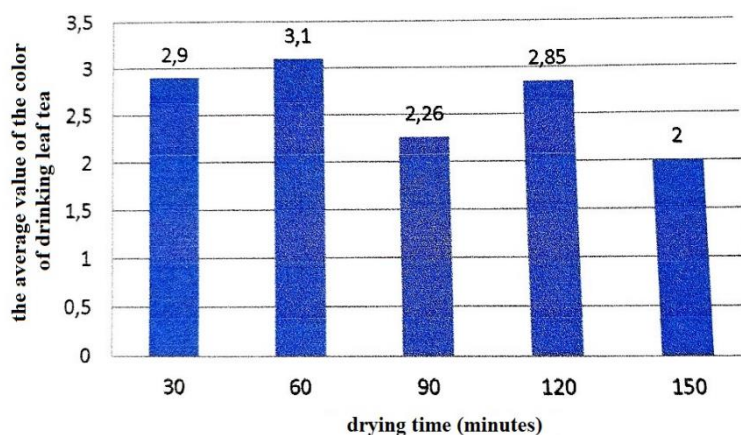


Figure 9. The results of the panelist's assessment of the color of the Litsea cubeba leaf tea drink

The highest drink color value was found in the 60 minute drying time sample of 3.1, while the lowest value was obtained for 120 minute drying time, amounting to 2.0. The Friedman test results obtained a p-value of 0.00 where a p-value <0.01 means that there is a very significant effect of drying time on Litsea cubeba leaf tea. In accordance with Arifan's opinion (2018) explaining the problem of the color of tea, the tea flavin compound gives a yellowish-red, bright color and affects the clarity of the brew.

Viscosity

According to the SNI 01-3143-1992 standard, the viscosity of a good Litsea cubeba leaf tea drink is normal, that is thick. Tea catechins are oxidized to orthoquinones which condense to form theaflavins (TF). This compound is responsible for the thickness of the tea (Hamsal et al., 2018).

The highest viscosity value of tea drink was 2.05 for 30 and 60 minutes of drying time, while the lowest value was 1.6 for 120 minutes of drying time. The results of the Friedman test using p=0.05 obtained data with a significant level of p-value 0.76 where the p-value > 0.05 so that the drying time can be obtained for the viscosity of Litsea cubeba leaf tea drink.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The results of the study can be concluded from the results obtained that there is an effect of drying time on the antioxidant activity of Litsea cubeba leaf tea. The operational conditions for drying tea leaves at 50°C with a drying time of 150 minutes produced Litsea cubeba leaf tea with the highest antioxidant activity, the lowest EC50 value, but under these operational conditions, Litsea cubeba leaf tea had the lowest organoleptic value, especially taste. Obtaining Litsea cubeba leaf tea which is good in terms of antioxidant and organoleptic activity, it is necessary to do research on the effect of adding essence to the manufacture of Litsea cubeba leaf tea

Suggestion

Further research is needed on sampling the young and old leaves of the Litsea cubeba industrial tree because the age of the leaves also affects the efficacy and amount of antioxidant content, as well as the financial analysis including the packaging used for herbal tea packaging for the Litsea cubeba leaf commodity.

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Sukmawati

University of Riau
Faculty of Economics and Business

Marnis

University of Riau
Faculty of Economics and Business
Corresponding Author
marnis@lecturer.unri.ac.id

Tri Sukirno Putro

University of Riau
Faculty of Economics and Business

THE EFFECT OF TRANSFORMATIONAL LEADERSHIP AND TRANSACTIONAL LEADERSHIP ON WORK MOTIVATION AND EMPLOYEE ENGAGEMENT (MEDICAL) EMPLOYEE AT ZAINAB CHILDHOOD HOSPITAL PEKANBARU

Abstract: This study aims to examine and analyze the influence of transformational leadership and transactional leadership on work motivation and employee engagement (medical) at Zainab Mother and Child Hospital Pekanbaru. This study uses a quantitative approach with descriptive analysis method. This study had 127 samples from a total population of 127 medical employees. The data used consists of primary data and secondary data. Data collection was carried out using a questionnaire. Descriptive analysis method is used to describe the characteristics of respondents and research hypotheses using relevant statistical tests. The data analysis technique uses path analysis with the SPSS program. The research results show 1. Transformational leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital. 2. Transactional leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital. 3. Transformational leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital. 4. Transactional leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital. 5. Transformational leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital. 6. Transactional leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital.

Key words: Transformational leadership, transactional leadership, motivation, employee engagement
Language: English

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Introduction

Along with the current rapid population growth in Indonesia with a total of 270,203,917 people in general, and specifically in Riau with a total of

6,394,087 people, the need for health services has also increased, both primary and primary basic needs.

Primary needs can be met through puskesmas, primary clinics and primary services can be met at general hospitals or special hospitals, such as mother

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and child hospitals that specifically provide services for maternal and child problems.

A hospital is a health service institution that provides comprehensive individual health services and provides inpatient, outpatient and emergency services. According to Law No. 44 of 2009 concerning hospitals organized based on Pancasila and based on human values, ethics and professionalism, benefits, justice, equal rights and anti-discrimination, equity, protection and patient safety, and has a social function. Nurses are one of the human resources in a hospital that determines the assessment of the quality of health services that must be managed optimally, continuously and given special attention.

Human resources involved in health services in hospitals consist of multi-professions, both health workers and non-health workers. Nurses are the most employees among all health workers in the hospital. According to Law no. 38 of 2014 concerning nursing (PDPERSI, 2014), the duties and responsibilities of nurses in carrying out work, namely carrying out nursing for each patient from simple to complex according to diagnosis, assisting case finding, managing patient nursing care, providing nursing consultations collaborating with doctors, providing knowledge to patients, evaluating the effectiveness of actions on patients, taking care of patients from morning, afternoon, evening and night with passion and patience, treating patients with diligence and focus, provide medication carefully according to the prescription of medical personnel, and provide motivation and attention to patients. Nurses with complex job characteristics are required to work

professionally and to the maximum extent possible to maintain the quality of hospital services in order to remain competitive.

Employee engagement is a multidimensional idea emotionally, cognitively or physically. Engagement occurs when a person is consciously aware of and emotionally connected to another person. When employees are engaged, employees have an awareness of the purpose of their role to provide services so that employees will give all their best abilities. Employees who have high engagement will feel comfortable in their work environment thereby reducing the desire to move (Khan in Luthans and Peterson, 2002).

Researchers conducted interviews with RSIA Zainab employees on (12 March 2021) found that:

1. Employees are anti-global changes and new things that can improve employee performance.
2. The low employee commitment is due to several factors, namely the low level of communication between leaders and employees, so that they are unable to increase employee commitment. Many employees submit resignation if there is a decision from management that is not in line with employee expectations and lack of employee attachment to the hospital, lack of seriousness in work, employee delays specifically to management.
3. Lack of employee concern among the team, employees are more concerned with their own work when it is finished without caring about the work of other employees who are still unfinished.

This is supported by a pre-survey of 20 RSIA Zainab Pekanbaru employees:

Table 1. Pre Survey Employee Engagement on RSIA Zainab Pekanbaru employees

No.	Question	Answer		Number of Nurses	Target In %
		Yes	No		
1.	I always try to add insight and learn new things (dynamic)	45	55	20	100
2.	I have always been committed to working for the company	30	70	20	100
3.	I always help co-workers who haven't finished their assignments	35	65	20	100

RSIA Zainab Pre-Survey

From table 1 above it can be seen that the three statements show the results that employees do not want to try to add insight and learn new things, low employee commitment and do not want to help colleagues. Low employee commitment can be seen from the LTO level of employees at RSIA Zainab, HRD Zainab stated that in 2020 the employee LTO rate reached 20.8% with 62 people leaving the company. This is of course the company's job to

increase employee engagement among its employees. Low commitment will have an impact on higher LTO levels.

The performance of nurses or employees in a hospital determines success in health services. The performance of nurses or hospital employees must be supported by activities development and coaching so as to improve the quality of service. Some factors that can affect the performance of nurses or employees are

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individual factors (skills, knowledge, abilities, background), psychological factors (perceptions, attitudes, motivation, and personality), and organizational factors (resources, leadership, and supervision). One of the psychological factors that greatly affect the performance of nurses or employees is motivation.

Motivation according to Robbins (2002) is the desire to perform as a willingness to spend a high level of effort for organizational goals, which is conditioned by the ability of that effort to fulfill an individual need. The phenomena found at RSIA Zainab are:

1. Low responsibility for work carried out by employees, so this will be detrimental to the company, which will produce bad work results.

2. Employees are low at doing a good job, it is found that employees are still doing work under the direction of their superiors, in this case employees are not aware of their duties and functions at work, so there must be more instructions from superiors.

From the phenomenon above, the researchers conducted a pre-survey of 20 employees of RSIA Zainab Pekanbaru:

Table 2. Pre-Survey of Motivation on RSIA Zainab Pekanbaru employees

No.	Question	Answer		Number of Nurses	Target In %
		Yes	No		
1.	I have a high personal responsibility towards work	25	75	20	100
2.	I am able to do something/work as well as possible	35	65	20	100
3.	I want to get fair wages according to work	65	45	20	100
4.	I have always wanted to earn a higher wage than usual.	50	50	20	100
5.	I want to learn to master the work in their field	40	60	20	100

RSIA Zainab Pre-Survey

From table 2 it can be seen that employee motivation at work is very low as can be seen from several statements that answered no. This certainly hinders work if employee motivation is low. In this motivational effort, it is necessary to have a factor that must be owned by employees, namely morale. The spirit of work itself arises and grows within employees due to motivation from the leadership in the sense that the leadership gives motives or encouragement to employees, where the motive itself concerns the needs of employees, both inner needs and physical needs. High employee motivation will have a positive impact on the progress of the company and the development of the employees themselves. This has encouraged many company management to focus and start paying more attention to employee motivation.

According to Zanikham (2008) Transformational leadership is defined as the ability of leaders to change work abilities, work motivation, work patterns and work values perceived by subordinates so that they are better able to optimize performance to achieve organizational goals. Based

on interviews with HRD RSIA Zainab Pekanbaru, it shows that:

1. Leaders are unable to get employees to join in with employees in creating the vision that exists in the company.

2. Leaders are lacking in terms of motivation, meaning that leaders are less passionate about communicating with subordinates things that can make employees motivated to be more enthusiastic at work.

3. Leaders have not been able to make employees accept new ways of working, employees are very afraid of new changes being made.

4. Lack of attention from leaders to employees, leaders pay less attention through rewording employees for the achievements made by employees.

To support the phenomena that occur in the corporate environment regarding transformational leadership in RSIA Zainab employees, researchers also conducted a pre-survey of 20 employees with the following results:

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Table 3. Pre Survey of Transformational Leadership on RSIA Zainab Pekanbaru employees

No.	Question	Answer		Number of Nurses	Target In %
		Yes	No		
1.	Leaders are able to motivate employees to be able to jointly create the vision that exists in the company	30	70	20	100
2.	Leaders are able to motivate employees to increase employee morale	45	55	20	100
3.	Leaders are able to encourage employees to solve old problems in new ways	40	60	20	100
4.	Leaders always pay attention and provide examples so that employees are able to develop better personalities	45	55	20	100

RSIA Zainab Pre-Survey

Table 3 shows that transformational leadership has not been able to increase employee motivation in doing work. The first consequence of a person's loss of enthusiasm for work is that work is delayed. Employees become unmotivated to do everything and finally the work that is their responsibility is neglected. Employees who do not have enthusiasm for work in the company will easily experience stress. This is caused by a domino effect (sustained reaction) felt by employees in the company.

When employees start to lose enthusiasm for work, they become unmotivated to get the job done and end up getting delayed. After the work is delayed and piled up, employees will experience stress because they see the amount of work that has not been completed. Delayed employee work will certainly have an impact on the company's operational activities. When operational activities are hampered, it is certain that the company will experience a slight decline in terms of revenue. Employees who lack enthusiasm for work not only result in delayed work, but can also have a negative effect on their fellow co-workers. As a leader or superior, a leader must be able to find solutions to increase employee morale for the continuity of the company.

Research conducted by Charista and Nyoto (2015) has proven that transformational leadership has a positive and significant effect on employee engagement with a leadership period of more than 1 year, so this supports the statement that transformational leadership was applied by GMs during the 8 months of their leadership. have not been able to encourage the creation of employee

engagement and have not been able to increase motivation. This research is in line with the research of Marwan Milhem, Habsah Muda, Khalil Ahmed. 2019 with the title "The effect of perceived transformational leadership style on employee engagement" that transformational leadership has a significant effect on employee engagement. This is also reinforced by the research of Herman HM Tse1. March L. To2. Warren CK Chiu 3. 2017 with the title "When and why does transformational leadership influence Employee creativity? The roles of personal control and creative personality ting effect of the leader's emotional intelligence" with the result that transformational leadership has an effect on employees.

According to Wibowo (2014) transactional leadership is leadership that helps organizations achieve current goals more efficiently, such as by linking job satisfaction to reward assessments and ensuring that workers have the resources needed to complete work. Based on interviews with RSIA Zainab employees, it shows that:

1. Lack of rewards given by leaders to subordinates who do a good job or achieve targets.
2. Leaders are still lacking in giving punishment to employees if employees make the same mistakes, so in this case employees do not have a deterrent effect and do not want to correct mistakes.

To support the phenomena that occur in the corporate environment regarding transformational leadership in RSIA Zainab employees, researchers also conducted a pre-survey of 20 employees with the following results:

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Table 4. Pre-Survey of Transactional Leadership on RSIA Zainab Pekanbaru employees

No.	Question	Answer		Number of Nurses	Target In %
		Yes	No		
1.	Leaders always reward subordinates for the achievements made	40	60	20	100
2.	The leader always supervises the process of carrying out the tasks of the subordinates directly	50	50	20	100
3.	The leader gives warnings and sanctions to his subordinates if there is an error in the process carried out by the subordinate concerned	45	55	20	100

RSIA Zainab Pre-Survey

work system that is not constant because it adapts to the tasks being carried out, lack of motivation to work because there is no motivation from the leadership, leaders who cover up the mistakes of their subordinates so that they can be appreciated by their subordinates, lack of socialization of the application of reward and punishment so that misunderstandings often occur between employees and superiors, division unfair assignments from leaders, lack of appreciation for employees who have good performance. Research conducted by Ida Siswatiningsih, Kusdi Raharjo, Arik Prasetya, 2018 with the title "The Influence of Transformational and Transactional Leadership on Organizational Culture, Work Motivation, Organizational Commitment and Employee Performance" with the result that transactional leadership has no effect on motivation. lack of work motivation due to lack of motivation from leaders, leaders who cover up the mistakes of their subordinates so that they can be appreciated by their subordinates, lack of socialization of the application of rewards and punishment so that misunderstandings often occur between employees and superiors, unfair division of tasks from leaders, lack of appreciation for employees which has good performance. Research conducted by Ida Siswatiningsih, Kusdi Raharjo, Arik Prasetya, 2018 with the title "The Influence of Transformational and Transactional Leadership on Organizational Culture, Work Motivation, Organizational Commitment and Employee Performance" with the result that transactional leadership has no effect on motivation. lack of work motivation due to lack of motivation from leaders, leaders who cover up the mistakes of their subordinates so that they can be appreciated by their subordinates, lack of socialization of the application of rewards and punishment so that misunderstandings often occur between employees and superiors, unfair division of tasks from leaders, lack of appreciation for employees which has good performance. Research conducted by Ida Siswatiningsih, Kusdi Raharjo, Arik Prasetya, 2018

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From the background that researchers have done at RSIA Zainab, therefore researchers are interested in examining the same variables but in different places by taking employees as samples at the Zainab Mother and Child Hospital Pekanbaru with the title: "The Influence of Leadership Transformational and Transactional Leadership on Work Motivation and Employee Engagement (Medical) Zainab Mother and Child Hospital Pekanbaru"

The formulation of the problem in this study refers to the background of the problems that occurred at the Zainab Mother and Child Hospital in Pekanbaru as follows:

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1) Does transformational leadership affect the work motivation of employees at Zainab Pekanbaru Mother and Child Hospital?

2) Does Transformational leadership affect Employee Engagement at Zainab Pekanbaru Mother and Child Hospital?

3) Does transactional leadership affect the work motivation of employees at Zainab Pekanbaru Mother and Child Hospital?

4) Does transactional leadership affect employee engagement at Zainab Pekanbaru Mother and Child Hospital?

5) Does work motivation affect employee engagement at Zainab Pekanbaru Mother and Child Hospital?

6) Does transformational leadership affect employee engagement through work motivation?

7) Does transactional leadership affect employee engagement through work motivation?

LITERATURE REVIEW

Employee Engagement

According to Hughes and Rog (2008) employee engagement is a high emotional and intellectual relationship that employees have with their work, the organization, managers, or co-workers that exert influence to increase discretionary effort in their work. A good relationship with the job for which he is responsible, the organization where he works, the manager who is his boss and provides support and advice, or co-workers who support each other allows individuals to give their best efforts that exceed the requirements of a job.

Saks (2006) also put forward an explanation of attachment as a motivational construct that has two dimensions which include attention (a person's cognitive availability to think about his work role in a period of time) and absorption (a person's intensity in focusing on his work role).

Robinson et al (2004) define employee engagement as a positive attitude that employees have towards the organization where they work and the values that are owned by that organization. Thus, in the concept of employee engagement, there is a two-way relationship between employees and the company.

Mujiasih (2015) defines employee engagement as a condition in which humans feel that they have found their full sense of self, have motivation at work, are able to receive positive support from others, and are able to work effectively and efficiently in the work environment.

Schaufeli & Bakker (2004) defines employee engagement as a positive, satisfying state of mind, attitude related to work. Engagement refers to a state of genuine and consistent feeling and thinking that does not only focus on certain objects, events, individuals or behaviors. Based on the descriptions of the several figures above, the meaning of employee

engagement is a high emotional and intellectual relationship between employees and their work. Employee engagement is also indicated by the behavior of employees who give more effort to their work and are able to work effectively and efficiently in the work environment.

Employee Engagement Indicator

1. *Engagement traits*
 2. *State engagement*
 3. *Behavioral engagement*
- Macey and Schneider (2008)

Work motivation

Olatunji Eniola (2015) states, "motivation is one of the greatest challenges facing managers across the globe because it influences workers' performance and thus the extent to which organizations are able to achieve their objectives and justify their existence". Robbins in Wilson Bangun (2012) states, "motivation as the processes that account for an individual's intensity, direction, and persistence of effort toward achieving a goal".

Motivation comes from the word "movere" which means "impulse or driving force". Motivation is only given to humans, especially to subordinates or followers. Motivation is a process that begins with a desire or encouragement that directs a person, either physiological or psychological, or there is a need that drives one's behavior, or there is a desire to achieve a goal, or in the form of certain rewards according to Azizil Bana (2016).

Motivation Indicator

1. *existence*(existence)
 2. *Relatedness*(connectedness)
 3. *growth*(growth)
- Alderfer (2004)

Transformational leadership

Leadership is the ability of a leader to influence other people (employees), he needs a certain leadership style or behavior, known as 21st century leadership, namely transformational leadership. According to Setiawan and Muhith (2012) lexically the term transformational leadership consists of two words, namely leadership and transformational. The term means a change in form (shape, nature, function, etc.) and some even state that the word transformation stems from the word "to transform" which means transforming vision into reality, heat into energy, potential into factual, latent into manifest.

According to Lensufiie (2010) that transformational leadership has the notion of leadership that aims for change, the change in question is assumed to be a better change against the status quo and active. Transformational leadership is also defined as a leadership approach that creates positive and valuable change for an organization.

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Transformational Leadership Indicators

1. Charisma.
2. Inspirational Motivation.
3. Intellectual Stimulation.
4. Individual Attention.

Transactional Leadership

According to Wibowo (2014) transactional leadership is leadership that helps organizations achieve current goals more efficiently, such as by linking job satisfaction to reward assessments and ensuring that workers have the resources needed to complete work. Transactional leadership is more directed to leaders who emphasize giving rewards to subordinates and controlling the work of their subordinates and directing them to the goals that have been set in order to clarify the roles and task demands of Garnasih and Pramadewi (2013).

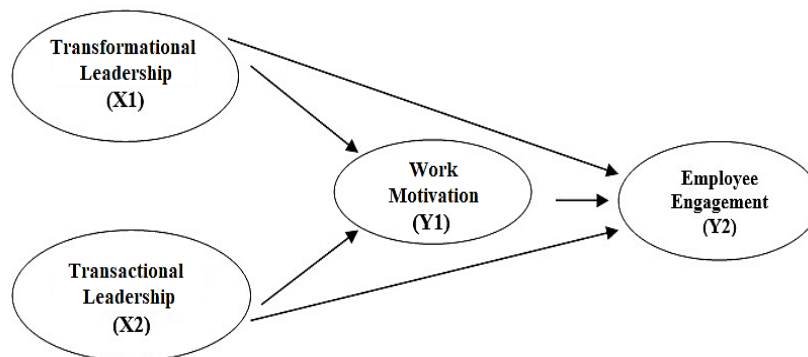
Transactional leadership is a leadership model in which a leader is more likely to provide direction to

his subordinates, and provide incentives and punishments for their performance and focuses on behavior to guide his followers Maulizar and Yunus (2012). Transactional leadership style is also known as managerial leadership which focuses on the supervisory role, organization, and group performance. Transactional leadership style is a leadership style in which the leader encourages the obedience of his followers through two factors, namely rewards and punishments. Leaders with a transactional leadership style work by paying attention to the work of employees to find errors and irregularities. This type of leadership is very effective in crisis and emergency situations.

Transactional Leadership Indicators

1. Rewards
 2. Supervision
 3. Punishment
- Clouds (2014)

Figure 1. Research Framework



Research Hypothesis:

1. There is a positive and significant relationship between Transformational Leadership and Work Motivation.
2. There is a positive and significant relationship between Transformational Leadership and Employee engagement.
3. There is a positive and significant relationship between Transactional Leadership and Work Motivation.
4. There is a positive and significant relationship between Transactional Leadership and Employee engagement.
5. There is a positive and significant relationship between work motivation and employee engagement.

6. There is a positive and significant relationship between transformational leadership and employee engagement through work motivation.

7. There is a positive and significant relationship between transactional leadership and employee engagement through work motivation.

RESEARCH METHODOLOGY

This study uses a quantitative approach with descriptive analysis method. In this study, the population was all medical employees of RSIA Zainab with a sample population of 127 people

Data was collected using a questionnaire. Test the research hypothesis using relevant statistical tests. The data analysis technique uses path analysis with the SPSS program.

RESULTS AND DISCUSSION

Impact Factor:	ISRA (India) = 6.317	SIS (USA) = 0.912	ICV (Poland) = 6.630
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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

Table 5. Structural Path Analysis I

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	std. Error	Betas		
1 (Constant)	4,884	.910		5,321	.000
Transformational Leadership (X1)	.316	.058	.468	5,429	.000
Transactional Leadership (X2)	.326	.082	.433	5,539	.000

Source: Research Processed Data, 2022

Data analysis:

1. Based on table 4.19 the results of the hypothesis test above show that: transformational leadership variable (X1) is obtainedtcount of 5.429 is greater than ttable 1.979 or the significance is less than 0.05, namely 0.000. It means independent variabletransformational leadership (X1)can explain the dependent variableWork Motivation (Y1). Thus it can be concluded that there is an influence of transformational leadership (X1) on work motivation (Y1).

2. Based on table 4.19, the results of the hypothesis test above show that: Transactional leadership variable (X2) is obtainedtcount of 5.539 is greater than ttable 1.979 or significantly less than 0.05, namely 0.000. It means independent variableTransactional leadership (X2)can explain the dependent variableWork Motivation (Y1). Thus it can be concluded that there is an influence of Transactional leadership (X2) on Work Motivation (Y1).

To see the value of work motivation can be seen from the value of R Square:

Table 6.

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	std. Error	Betas		
1 (Constant)	3,293	.756		4,356	.000
Transformational Leadership (X1)	.282	.049	.434	5,822	.000
Transactional Leadership (X2)	.442	.062	.483	7.152	.000
Work Motivation (Y1)	.288	.067	.290	2,855	.000

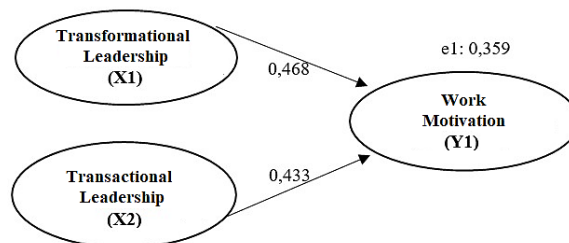
a. Dependent Variable: Employee Engagement (Y2)

Source: Research Processed Data, 2022

To get the value of e1:

$$\sqrt{1-0.871} = 0.359$$

Figure 2. Pathway Analysis I



Path Equation I : $Y_1 = p_{y1x1} + p_{y1x2} + e_1$

: $0,468 + 0,433 + 0,359$

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Table 7. Structural Path Analysis II

Model	R	R Square	Adjusted R Square	std. Error of the Estimate
1	.879 ^a	.871	.874	.358
a. Predictors: (Constant), Transactional Leadership (X2), Transformational Leadership (X1)				
b. Dependent Variable: Work Motivation (Y1)				

1. Based on table 4.20, the results of the hypothesis test above show that: transformational leadership variable (X1) is obtained tcount of 5.536 is greater than ttable 1.979 or significantly less than 0.05, namely 0.000. It means independent variable transformational leadership (X1) can explain the dependent variable *Employee Engagement (Y2)*. Thus it can be concluded that there is an influence of transformational leadership (X1) on Employee Engagement (Y2).

2. Based on table 4.20. The results of the hypothesis test above show that: Transactional leadership variable (X2) is obtained tcount of 5.822 is greater than ttable 1.979 or significantly less than 0.05, namely 0.000. It means independent variable Transactional leadership (X2) can explain the

dependent variable *Employee Engagement (Y2)*. Thus it can be concluded that there is an influence of Transactional leadership (X2) on Employee Engagement (Y2).

3. Based on table 4.20, the results of the hypothesis test above show that: the variable Work Motivation (Y1) is obtained tcount of 2.885 is greater than ttable 1.979 or significantly less than 0.05, namely 0.000. It means independent variable Work Motivation (Y1) can explain the dependent variable *Employee Engagement (Y2)*. This it can be concluded that there is an influence of Work Motivation (Y1) on Employee Engagement (Y2).

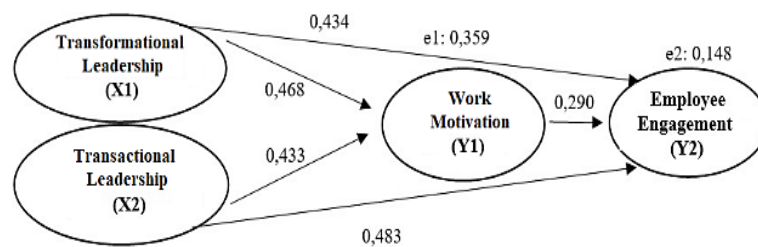
To see the value of work motivation can be seen from the value of R Square:

Table 8.

Model	R	R Square	Adjusted R Square	std. Error of the Estimate
1	.960 ^a	.978	.971	.540
a. Predictors: (Constant), Transactional Leadership (X2), Transformational Leadership (X1)				
b. Dependent Variable: Employee Engagement (Y2)				

To get the value of e2:
 $\sqrt{1-0.978} = 0.148$

Figure 3. Pathway Analysis II



Path Equation II: $Y_2 = py_{2x1} + py_{2x2} + py_{2y1} + e_2$

$: Y_2 = 0,434 + 0,483 + 0,290 + 0,148$

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PIF (India) = 1.940
IBI (India) = 4.260
OAJI (USA) = 0.350

Data analysis:

1. The effect of transformational leadership on employee engagement through work motivation it is known that the direct effect of transformational leadership on employee engagement is 0.434. Meanwhile, the indirect effect of transformational leadership on employee engagement through work motivation is the multiplication of the beta value (transformational leadership on motivation) and the beta value (transformational leadership on employee engagement), namely $0.468 \times 0.290 = 0.135$.

Based on the calculation above, it is known that the direct effect is 0.434 and the indirect effect is 0.135, which means that the indirect effect is smaller than the direct effect, so the conclusion is that transformational leadership on employee engagement through work motivation does not have a significant effect.

2. The effect of transactional leadership on employee engagement through work motivation it is known that the direct effect of transactional leadership on employee engagement is 0.483. Meanwhile, the indirect effect of transactional leadership on employee engagement through work motivation is the multiplication of the beta value (transactional leadership on motivation) and the beta value (transactional leadership on employee engagement), namely $0.433 \times 0.290 = 0.125$.

Based on the calculation above, it is known that the direct effect is 0.434 and the indirect effect is 0.125, which means that the indirect effect is smaller than the direct effect. The conclusion is that transactional leadership on employee engagement through work motivation does not have a significant effect.

DISCUSSION

1. The Effect of Transformational Leadership on Employee Engagement

The results of the study show that transformational leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital. This indicates that the existing employee engagement at the Zainab Women's and Children's Hospital can be determined by transformational leadership. This means that if a company has charismatic leaders, has inspirational motivation, intellectual stimulation and individual attention, employees will form or strengthen employee engagement with the company. The results of the pre-survey show that employee commitment is still low due to several factors, namely the lack of communication between leaders and employees, so that they are unable to increase employee commitment. Many employees submit resignation if there is a decision from management that is not in line with employee expectations and lack of employee attachment to the hospital, lack of seriousness in work,

employee delays specifically to management. If the leaders in the company are able to carry out good transformational leadership, then the commitment to increase employee engagement will be even stronger. The results of this study are in accordance with research conducted by Tims et al. (2011) stated that transformational leadership has a positive effect on the daily work engagement of The Netherlands employees. This is also supported by research by Wulandari et al. (2013) which states that transformational leadership has a positive effect on employee engagement at PT. Two Pati Rabbits.

2. The Effect of Transactional Leadership on Employee Engagement

The results of the study show that transactional leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital. This indicates that the existing employee engagement at Zainab Mother and Child Hospital can be determined by transactional leadership. Things that can strengthen employee engagement in the company are the existence of transactional leaders who provide rewards or rewards to employees who do work within the limits of their abilities, there is supervision carried out by leaders so that work goes well and leaders apply punishment to employees who make repeated mistakes, for the sake of don't make the same mistake. Leaders with a transactional leadership style will provide conditional rewards to employees and perform managerial with positive or negative exceptions. The characteristics of an engaged employee are employees who work with enthusiasm, show sincerity, understand their work, and focus on what they are doing.

The results of this study are in line with research (Inge Victoria, et al) Transformational leadership on employee engagement has a positive and significant effect on employees (Study on Non-Medical Employees at KRMT Wongsonegoro Semarang Hospital) and research (Sinta Yulianti, et al) Transformational leadership has an effect on employee engagement.

3. The Effect of Transformational Leadership on Work Motivation

The results of the study show that transformational leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital. This indicates that work motivation at the Zainab Mother and Child Hospital can be determined by transformational leadership. This means that if a company has a leader who is charismatic, has inspirational motivation, intellectual stimulation and individual attention, then employees will be motivated by leaders who have a transformational soul.

With good motivation from leaders to employees, they will be able to encourage employees to behave, provide direction and regulate behavior, and determine behavior towards certain goals. If

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employee behavior is accompanied by high motivation, it will result in satisfactory productivity.

The results of Mujiasih and Hadai's research (2003) found that transformational leader behavior can increase one's motivation to expend extra effort to achieve planned performance. This result is in line with the conception of transformational leadership trying to arouse the needs of its subordinates at a higher level. Judge and Bono (2000) found that, individuals who perceive that their leaders play transformational leadership behaviors tend to show higher work motivation Fahrudin and Pareke (2004).

4. Effect of Transactional Leadership on Work Motivation

The results of the study show that transactional leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital. This indicates that work motivation at the Zainab Mother and Child Hospital can be determined by transactional leadership. This means that transactional leadership is able to motivate employees to perform better. Motivation is able to be awakened by a desire in a person causing that person to take an action. Human behavior is actually just the simplest reflection of their basic motivation and motivation can be built by other people such as transactional leaders, motivation is built by other people a process that begins with a desire or encouragement that directs a person either physiologically or psychologically.

Transactional leadership focuses its attention on interpersonal transactions between managers and employees that involve exchange relationships. The exchange is based on an agreement regarding the clarification of objectives, work standards, and work assignments as well as rewards (rewards and incentives) for task fulfillment.

This research is in accordance with research conducted by Taruk Todingallo Delvi Awan (2020) which states that transactional leadership is significant for work motivation with a positive relationship.

5. The Influence of Transformational Leadership on Employee Engagement through Work Motivation

The results of the study show that transformational leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital. This indicates that transformational leadership on employee engagement in the Zainab Mother and Child Hospital cannot be determined by work motivation. Work motivation in this study cannot mediate between transformational leadership and employee engagement. This means that when employees have job satisfaction, work motivation tends to be high, they also have weak employee engagement.

Transformational leadership has the notion of leadership that aims for change, the change in question

is assumed to be a better change against the status quo and active. Transformational leadership is also defined as a leadership approach that creates positive and valuable change for an organization.

Transformational leadership at RSIA Zainab is not able to encourage activities to influence and direct employees to behave regularly so as to make an employee's attachment weak to the company.

6. The Effect of Transactional Leadership on Employee Engagement through Work Motivation

The results of the study show that transactional leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital. This means that the better the transactional leadership owned by a company is not able to influence the level of employee engagement through the work motivation it gets. Existence, Relatedness and Growth are not able to make employees create self-motivation for the company, so it will create weak employee engagement.

Transactional leadership that is unable to increase high emotional and intellectual relationships with employees will have an impact on their work, the organization, managers, or co-workers and transactional leadership that is unable to exert influence to increase discretionary effort in their work will make employees feel unmotivated and create engagement. weak employees. Transactional leadership must create good relationships with the employees for whom it is responsible, the organization where he works, the manager who is his boss and provides support and advice, or colleagues who support each other so that individuals can give their best efforts that exceed the requirements of a job and are able to increase high employee engagement in the company.

7. The Effect of Work Motivation on Employee Engagement

The results of the study show that work motivation has a significant effect on employee engagement at the Zainab Mother and Child Hospital. This indicates that the existing employee engagement at the Zainab Women's and Children's Hospital can be determined by work motivation. This means that the strength or weakness of employee engagement in a company is determined by the amount of motivation given by leaders and co-workers in the company. Good work motivation will create existence, connectedness and growth in employees, in this way employee engagement will be stronger. If employee engagement is strong, then the desire to stay and performance will shape the employee.

An employee who feels attached to the company where he works will give his best effort beyond what is expected at work, this can happen if the employee has high work motivation in carrying out his duties in

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the company or organization. An employee feels engaged when they find meaning and motivation in their work, receive positive interpersonal support and are in a work environment that functions efficiently.

Employee engagement is the attitude and behavior of employees who have positive motivation at work, characterized by enthusiasm, involvement, and extra effort at work to encourage innovation and achieve organizational goals.

This is in line with research conducted by Aditia (2015) showing that work motivation has a significant effect on employee engagement of 48.5%. Meanwhile, research conducted by Hermin (2015) shows that work motivation has a significant influence on employee engagement by 51%.

CONCLUSION

1. Transactional leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital.

2. Transactional leadership has a significant effect on employee engagement at the Zainab Mother and Child Hospital.

3. Transformational leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital.

4. Transactional leadership has a significant effect on work motivation at the Zainab Mother and Child Hospital.

5. Transformational leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital.

6. Transactional leadership has no significant effect on employee engagement through work motivation at the Zainab Mother and Child Hospital.

7. Work motivation has a significant effect on employee engagement at the Zainab Mother and Child Hospital.

SUGGESTION

1. To increase high employee engagement in companies, it is necessary to have transformational

leaders who are able to make employees commit themselves to the company by means of leaders having charismatic attitudes that are able to influence employees and make employees have a strong sense of attachment to the company.

2. In order for employees to have strong employee engagement with the company, companies need to provide rewards or rewards to employees who do very good work and have an impact on the company, with rewards employees will feel valued and will give a sense of desire to stay at the company and be able to provide strong attachment to the company.

3. Employee engagement will be stronger if the motivation is formed by one of the company leaders, such as the growth provided by the company to employees, such as the needs that a person has to develop skills, be creative and productive. By fulfilling this need, employees are able to increase the level of employee engagement in the company.

4. Motivation is able to increase employee engagement in a company, one way is by having (connectedness) the need to relate to other parties, namely the need to be satisfied by beneficial social relations and interpersonal relations. If leaders or companies are able to establish good relationships with employees, then employees will create strong employee engagement in the company.

5. To improve transformational leadership on employee engagement through work motivation, there needs to be collaboration between appreciation, connectedness and the needs provided to employees.

6. To increase transactional leadership on employee engagement through work motivation, companies must provide needs that are satisfied by factors such as food, water, air and rest. There is a provision of more incentives to employees.

7. Strong work motivation will be able to make employees bind to the company, for this the company needs to provide jobs that are challenging, varied, using different skills, personal considerations, and opportunities to make contributions. Jobs that have high job characteristics can encourage employees to interpret their work more or become more engaged.

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Article



Anastasia Vitalievna Tischenko

Peter the Great St. Petersburg Polytechnic University
Bachelor's Student
Institute of Computer Science and Technology

Oleg Yurievich Sabinin

Peter the Great St. Petersburg Polytechnic University
Candidate of Engineering Sciences, Docent
Institute of Computer Science and Technology

IMPLEMENTATION OF A MODERN IOC CONTAINER TO AUTOMATING DEPENDENCY INJECTION

Abstract: The purpose of the article is to develop modern IoC container to simplify dependency injection.

Key words: container, component definition, dependency, module, extension.

Language: Russian

Citation: Tischenko, A. V., & Sabinin, O. Yu. (2023). Implementation of a modern IoC container to automating dependency injection. *ISJ Theoretical & Applied Science*, 06 (122), 131-139.

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РЕАЛИЗАЦИЯ СОВРЕМЕННОГО ИОС-КОНТЕЙНЕРА ДЛЯ АВТОМАТИЗАЦИИ ПРОЦЕССА ВНЕДРЕНИЯ ЗАВИСИМОСТЕЙ

Аннотация: Целью является анализ проблем кода с высоким уровнем связанности и реализация программного решения для автоматизации процесса внедрения зависимостей.

Ключевые слова: контейнер, компоненты программы, зависимость, модуль, точки расширения.

Введение

UDC 004.4

Программная платформа Java многие годы занимает лидирующие позиции в мире разработки программного обеспечения за счет своей безопасности и расширяемости. Платформа покрывает большинство нужд как мобильных, так и корпоративных программных решений благодаря широким возможностям и встроенному механизму защиты, а также не зависит от среды выполнения, так как может выполняться на любом устройстве, которое поддерживает виртуальную машину Java (JVM).

Самым выделяющимся принципом Java-платформы и её языков программирования является принцип поддержки полной обратной совместимости кода. Соблюдение данного

принципа является показателем надежности работы системы, поэтому создатели платформы неявным образом обязывают организации, разрабатывающие JVM-языки, соблюдать требования поддержки обратной совместимости, [1]. Действительно, большинство компаний и разработчиков, пользующихся Java-платформой, уверены в стабильности своих решений.

Принцип обратной совместимости имеет и негативные стороны – он в значительной степени усложняет модернизацию существующих инструментов.

Поддержка данного принципа популярна и среди Java-разработчиков, занимающихся созданием различных программных инструментов и библиотек, [2]. Среди программ и библиотек, разработчики которых зачастую применяют принцип обратной совместимости, существуют

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решения, которые тяжело сопровождать. Одни из них – IoC-контейнеры. Это специальный инструмент, упрощающий и автоматизирующий процесс написания кода с низким уровнем связанности.

Таким образом, предлагаемый IoC-контейнер – это инструмент, позволяющий использовать полные возможности современных JVM-языков программирования Kotlin и Groovy и Java-платформы 17 версии.

Цель и задачи исследования

Целью статьи является разработка универсального аналога существующих IoC-контейнеров с учетом их недостатков.

Для достижения цели были поставлены следующие задачи:

- провести исследование проблем кода с высоким уровнем связанности и проанализировать их решение;

- провести исследование способов построения графа зависимостей компонентов программ;

- реализовать пользовательский интерфейс и внутреннюю функциональность контейнера.

Исследование проблем кода с высоким уровнем связанности и анализ их решения

Одна из основных проблем, стоящих перед разработчиками при создании программных решений, которые написаны с использованием парадигмы объектно-ориентированного программирования (ООП) – как избежать написание кода с высоким уровнем связанности компонентов между собой, [3].

Пример кода с высоким уровнем связанности представлен на рисунке 1.

```
class CardService {
    // Зависимости класса CardService
    private val cardDao: CardDao // Хранилище карт
    private val cardNumberValidator: CardNumberValidator // Валидатор номеров карт

    // Конструктор, в котором создаются экземпляры зависимостей
    // на этапе построения объекта CardService
    constructor() {
        cardDao = CardDao()
        cardNumberValidator = CardNumberValidator()
    }

    // Пример сохранения новой карты в системе
    fun saveCard(card: Card) {
        if (!cardDao.existsWithNumber(card.number)) {
            throw CardDoesNotExistException(card.number)
        }

        cardNumberValidator.validate(card.number)

        // Дополнительная бизнес-логика

        cardDao.save(card)
    }
}
```

Рисунок 1. Пример кода с высоким уровнем связанности.

В данном примере класс зависим от двух других компонентов проектируемого приложения: от хранилища карт и валидатора номеров банковских карт. Хранилище карт и

валидатор номера карты обеспечивают работу сервиса и являются его зависимостями. Диаграмма классов модуля по работе с данными банковских карт представлена на рисунке 2.

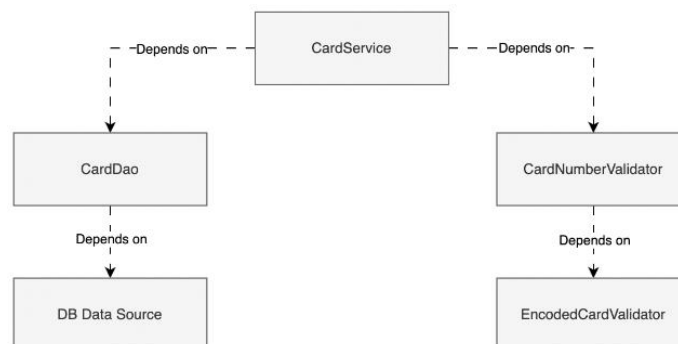


Рисунок 2. Диаграмма классов, демонстрирующая сильную связанность компонентов.

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В данном примере сервис, инкапсулирующий логику работы с данными банковских карт, ответственен за получение нужных ему зависимостей, но данный подход хорош лишь своей простотой. При написании такого кода можно выделить следующие проблемы:

- Программные компоненты могут иметь транзитивные зависимости.
- Усложняется возможность замены одной зависимости на другую, так как класс сам ответствен за свои зависимости и не представлен абстракцией.
- Сильно связанный код усложняет тестирование компонентов программного решения обособленно друг от друга, так как вместо написания «заглушек» для зависимостей тестируемого класса разработчик будет полностью имитировать условия возврата результата, нужного в рамках тестирования, [4].

Всё чаще сталкиваясь с данной проблемой, разработчики старались придумать универсальные правила, позволяющие спроектировать программные решения с грамотной архитектурой. Так, в начале 2000-х годов известный профессиональный программист Роберт Мартин сформулировал 5 принципов ООП, более известными под акронимом SOLID, [5]. Буква «D» описывает принцип инверсии зависимостей (dependency inversion principle):

- Модули верхних уровней не должны зависеть от модулей более нижних уровней.

Модули любых уровней должны зависеть от абстракций.

- Абстракции должны быть независимыми от деталей, но детали, в свою очередь, должны зависеть от абстракций.

Код, удовлетворяющий требованиям принципа инверсии зависимостей, является слабосвязанным.

Разработчики придумывали и разрабатывали различные способы разрешения проблем кода с высоким уровнем связанности, в частности, изобрели такие шаблоны проектирования, как «простая фабрика объектов» и «локатор служб». Также существует и другое решение данной проблемы - принцип инверсии зависимостей, частным случаем которого является внедрение зависимостей.

Внедрение зависимостей – совокупность принципов разработки ПО, упрощающих написание кода с низким уровнем связанности. Данный термин был введен разработчиком Мартином Флауэром, [6]. Принцип внедрения зависимостей подразумевает написание кода, в котором:

1. зависимости компонентов приложения должны передаваться извне через публичные методы доступа;
2. компоненты программы не должны заниматься созданием и настройкой своих зависимостей.

Пример внедрения зависимостей через конструктор класса представлен на рисунке 3.

```
// Теперь функциональность хранилища карт представлена абстракцией
interface CardDao {
    fun existsWithNumber(number: CardNumber): Boolean
}

// Теперь функциональность валидатора номера карты также представлена абстракцией
interface CardNumberValidator {
    fun validate(value: String)
}

class CardService {
    private val cardDao: CardDao // Хранилище карт
    private val cardNumberValidator: CardNumberValidator // Валидатор номеров карт

    // Теперь зависимости внедряются через конструктор
    constructor(dao: CardDao, validator: CardNumberValidator) {
        cardDao = dao
        cardNumberValidator = validator
    }

    // Пример сохранения новой карты в системе
    fun saveCard(card: Card) {
        if (!cardDao.existsWithNumber(card.number)) {
            throw CardDoesNotExistException(card.number)
        }

        cardNumberValidator.validate(card.number)

        // Дополнительная бизнес-логика

        cardDao.save(card)
    }
}
```

Рисунок 3. Пример реализации принципа внедрения зависимостей.

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Использование принципа внедрения зависимостей решило проблемы кода с высокой степенью связанности:

1. Сервис карт зависит от абстракций (интерфейсов) и не имеет прямых зависимостей на конкретные реализации хранилища карт и валидатора номеров карт.

2. Сервис карт не несет ответственность за управление своими зависимостями, поэтому при замене одной реализации зависимостей сервиса на другую разработчику не понадобится вносить

изменения в код его класса. Кроме того, замена одной реализации зависимости на другую не требует повторной сборки модуля, в котором находится сервис, а также транзитивно зависимых от него модулей.

3. Внедрение зависимостей упрощает модульное тестирование за счет возможности передавать в качестве зависимостей «заглушки».

Диаграмма, демонстрирующая зависимости сервиса карт при использовании принципа внедрения зависимостей, показана на рисунке 4.

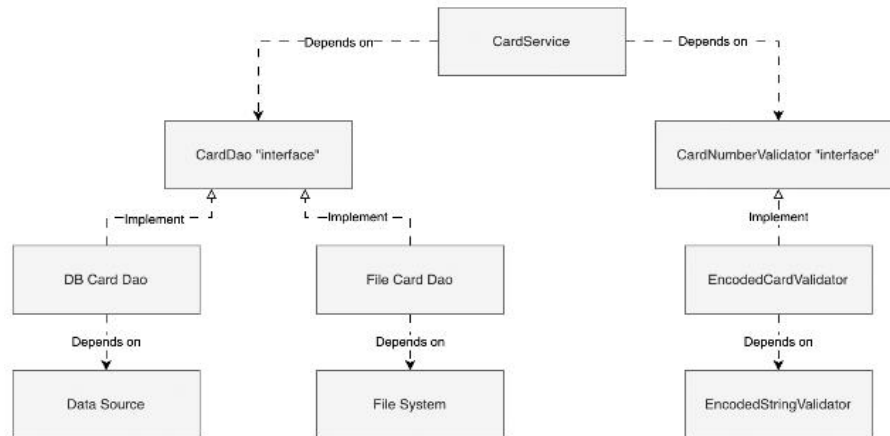


Рисунок 4. Диаграмма классов, демонстрирующая слабую связанность компонентов.

Исследование способов построения графа зависимостей компонентов программ

Набор компонентов программы и зависимостей между ними можно представить в виде ориентированного графа. Построение графа объектов должно начинаться в корне компоновки или в точке сбора (composition root). Корнем компоновки может являться как сама точка входа в программу, так и иные методы, содержащие логику построения графа. Хорошим считается решение, в котором точка компоновки находится как можно ближе к точке входа в программу.

Построение графов объектов осуществляется либо вручную, либо с использованием сторонних инструментов.

Ручное внедрение зависимостей — это один из возможных способов построения графа объектов без использования сторонних фреймворков и библиотек. Используя такой подход к построению графов объектов, разработчик берет на себя ответственность за процесс создания и компоновки каждого компонента приложения, [7]. Пример ручного построения графа зависимостей представлен на рисунке 5.

```
// Функция main() является точка входа в программу
fun main() {
    // Получение параметров подключения к базе данных
    // из конфигурационного файла application.properties
    val dbConfig = ConfigurationSource.newInstance()
        .fromClassPath("config/application.properties")
        .ofType<DatabaseConfiguration>()
        .load()

    // Ручное построение графа компонентов
    val cardService = CardService {
        dao = DatabaseCardDao {
            source = PostgreSQLDataSource {
                url = dbConfig.url,
                user = dbConfig.username,
                password = dbConfig.password
            }
        },
        validator = EncodedCardValidator {
            decoder = Base64Decoder()
        }
    }

    // Код с использованием ранее созданных компонентов
}
```

Рисунок 5. Ручное построение графа зависимостей объектов.

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Такой подход значительно уменьшает трудозатраты программиста на контроль иерархии зависимостей объектов приложения. Кроме того, одним из самых главных преимуществ данного подхода является высокая скорость создания графа объектов, [8].

По мере увеличения количества объектов и связей между ними в приложении растет сложность построения графа объектов. На этом проблемы не кончаются – программисты также обязаны контролировать различные механизмы поддержания корректной работы компонентов приложения.

IoC-контейнеры – это библиотеки, автоматизирующие процесс построения графов объектов, а также выполняющие внедрение точек перехвата и управляющие жизненным циклом компонентов приложения. Использование данного инструмента также позволяет автоматизировать некоторые задачи, возникающие при разработке компонентов приложения:

1. Освобождение доступа к внешним ресурсам, доступ к которым имеют компоненты программы (соединение с брокером сообщений, базой данных, потоки ввода/вывода в файловую систему и иные виды сессионного взаимодействия программ);

2. Вызов методов дополнительной инициализации управляемого объекта, также именуемое как двухфазовое построение объектов (two-step object construction), [9];

3. Применение методов АОП. Например, со временем разработкам понадобилось разделить основную бизнес-логику приложения от дополнительной (второстепенной). Хорошим способом сделать это будет использование Proxy, и процесс оборачивания объектов может быть автоматизирован IoC-контейнером.

Разработка пользовательского интерфейса и внутреннего механизма работы IoC-контейнера.

IoC-контейнер предоставляет открытый пользовательский интерфейс, позволяющий регистрировать определения компонентов – объектов, содержащих основную информацию о внедряемом компоненте.

IoC-контейнер предоставляет 4 различных способа построения определений компонентов:

- по типу (классу);
- по готовому объекту (экземпляру);
- по классу проводника;
- по выражению.

Главной единицей, регистрируемой в контейнере, является не компонент, а модуль.

Модули конфигурации – это объекты, объединяющие в себе связанные аспекты конфигурации в именованные единицы. Модули могут быть изолированными или зависимыми (в том числе транзитивно) друг от друга.

Каждый модуль содержит:

- определения компонентов. Регистрация компонента в контейнере означает его регистрацию в одном из модулей с последующей регистрацией этого модуля в контейнере;

- ссылки на другие модули. Модули могут импортировать друг друга, образуя зависимости;

- источники модулей. Модули могут быть как зарегистрированы напрямую в коде приложения, как и быть считаны из внешних источников во время инициализации контейнера;

- источники пользовательских свойств – наборы, каждый из которых представлен в виде ассоциативного массива «название свойства – значение свойства» (например, параметры для подключения к базе данных);

- пользовательские определения АОП-аспектов;

- предварительные обработчики компонентов приложения.

Пример кода на языке Kotlin-Script, который регистрирует в контейнере пользовательский модуль конфигурации, представлен на рисунке 6.

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```
module("cardProcessingCore.module") {
    // Регистрируемые в модуле "cardProcessingCore.module" компоненты
    components {
        // Компонент с указанием типа CardService
        singleton<CardService> {
            // При наличии нескольких компонентов с данным типом
            // данный компонент будет приоритетным
            primary()
            // Пользовательское переопределение квалификатора
            qualified<CustomUserQualifier>()
        }
        // Компонент с указанием экземпляра
        instance<RegexCardNumberValidator>("^([0-9]{12}([0-9]{3})?|5[1-5][0-9]{14})\\$")
        // Компонент с указанием типа DatabaseCardDao
        singleton<DatabaseCardDao> {
            // Новое переопределение имя компонента
            name("AccessorRepository.DB")
        }
        // Компонент с указанием провайдера
        provider<PostgreSQLDataSourceProvider>()
    }

    // Внешние импортируемые модули
    imports {
        // Модуль, содержащий логику управления транзакциями
        module<TransactionFlowModule>()
        // Модуль, содержащий общую логику работы с базами данных
        module<DatabaseModule> {
            // Переопределение определенных компонентов импортируемого модуля
            exclude<DataSource> {
                // Исключение из конфигурации компонентов с заданным именем
                qualifiedWith(name("DataSource.Common"))
            }
        }
    }

    // Внешние импортируемые свойства
    properties {
        // Свойства, перечисленные и описанные в файле card.properties
        fromClassPath("config/card.properties") {
            // Распознавание свойств вида "propertyName = ${customPropertyName}"
            resolveWith(PlaceholderPropertyResolver(
                placeholderPrefix = "\${",
                placeholderSuffix = "}",
                propertySource = SystemProperties
            ))
            // Кэширование распознанных свойств
            caching()
        }
        // Считывание системных свойств
        properties(SystemProperties)
    }

    // Аспекты
    aspects {
        aspect {
            // Установка признака точек внедрения
            pointcut(
                classMatcher = extends<ExternalService>(),
                methodMatcher = annotatedAs<Protected>()
                or hasParameterThat(annotatedAs<Protected>())
            )
            // Перехватчик
            interceptor<AuthInterceptor>()
        }
    }

    // Предварительные обработчики
    preProcessors {
        // Обработчик карт
        preProcessor<CardEntityPreProcessor>()
    }
}
```

Рисунок 6. Пример регистрации модуля в ЮС-контейнере.

Пользователь может определять конфигурацию как в программном коде, так и в файлах конфигурации. Контейнер не ограничен конкретными форматами файлов конфигурации, и помимо стандартных механизмов считывания конфигурации из файлов пользователь может создавать собственные механизмы.

Kotlin и Kotlin-Script предоставляют механизмы, позволяющие писать собственные

предметно-ориентированные языки (domain-specific language или DSL). Разработчики могут использовать предоставляемые контейнером DSL для лаконичного описания модулей конфигураций, [10].

Примеры источников конфигурации и их возможностей представлены на рисунке 7.

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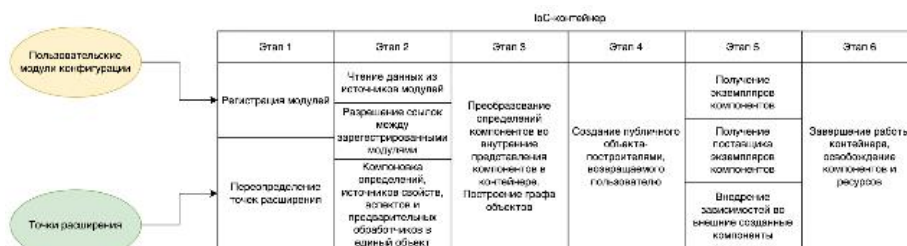


Рисунок 8. Жизненный цикл контейнера.

Еще одним преимуществом предлагаемого решения является анализ графа компонентов приложения до инициализации этих компонентов. Аналог IoC-контейнер Spring работает иначе – контейнер последовательно инициализирует компоненты при построении графа объектов. В разработанном решении процесс выполнения программы при возникновении ошибки завершится раньше, в отличие от IoC-контейнера Spring.

Процесс построения графа зависимостей выглядит следующим образом:

1. Пользователь регистрирует модули конфигурации;
2. После разрешения всех ссылок данные из этих модулей, включая определения компонентов, объединяются в основной единый модуль;



3. Сами по себе определения компонентов напрямую не содержат информации о своих зависимостях, поэтому появляется промежуточная стадия, в которой определения компонентов преобразуются в их внутренние модели, составляющие граф зависимостей. Именно из-за наличия данной стадии становится возможным замечать такие проблемы в конфигурации, как циклические зависимости между компонентами или недостающие зависимости компонентов, причем данные проблемы обнаруживаются еще до инициализации первого компонента программы.

Диаграмма, демонстрирующая процесс построения графа зависимостей, представлена на рисунке 9.

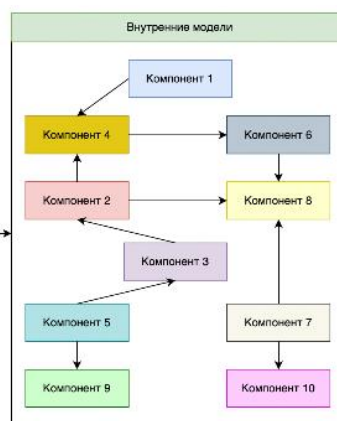


Рисунок 9. Процесс преобразования определений компонентов во внутренние модели контейнера

Выводы

Таким образом, в статье проведено исследование проблем кода с высоким уровнем связанности, описано их решение, проведен обзор

способов построения графа зависимостей компонентов программы, а также разработан пользовательский интерфейс и внутренняя функциональность IoC-контейнера.

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Aryuna Erdemovna Dashieva

Peter the Great St. Petersburg Polytechnic University
Bachelor's Student
Institute of Computer Science and Technology

Oleg Yurievich Sabinin

Peter the Great St. Petersburg Polytechnic University
Candidate of Engineering Sciences, Docent
Institute of Computer Science and Technology

IMPLEMENTATION OF THE BACKEND OF A WEB APPLICATION FOR FINDING INTERNSHIPS

Abstract: The article discusses the principles of developing the backend of a web application for finding internships based on the use of ORM (Object Relational Mapping) programming technology.

Key words: client-server, Object_Relational Mapping, database, authorization, authentication.

Language: Russian

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РЕАЛИЗАЦИЯ СЕРВЕРНОЙ ЧАСТИ ВЕБ-ПРИЛОЖЕНИЯ ПО ПОИСКУ СТАЖИРОВОК

Аннотация: В статье рассматриваются принципы разработки серверной части веб-приложения по поиску стажировок на основе использования технологии программирования ORM (Object Relational Mapping).

Ключевые слова: клиент-сервер, Object_Relational Mapping, база данных, авторизация, аутентификация.

Введение

UDC 004.6

Актуальность поиска работы в настоящее время становится все выше. Люди каждый день могут сталкиваться с проблемой поиска работы из-за увольнения или иных причин. В связи с этим в современном мире существуют различные веб-сервисы для поиска работы в Интернете. Такие сервисы помогают сэкономить время, избежать очередей, а также откликнуться можно из любой точки мира, где есть интернет. Особое внимание нужно уделить поиску наиболее подходящего сервиса для поиска работы, так как можно найти разные варианты, и не каждый из них сможет помочь трудоустроиться.

Кроме того, в настоящее время вопрос поиска работы становится актуальнее и для студентов с каждым днем. Однако на рынке в России нет сервиса именно для поиска стажировок.

Таким образом, разрабатываемое веб-приложение – это система для людей, которые хотят найти стажировку и для компаний, которые хотят набрать стажеров. Благодаря такой системе будущие стажеры могут искать, фильтровать стажировки, просматривать рекомендации, смотреть информацию о компаниях, а также откликаться на заявки. Компании, в свою очередь, смогут добавить свою стажировку с перенаправлением на свою форму, просматривать объявления других компаний, а также смотреть количество откликнувшихся людей.

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Цель и задачи исследования

Целью статьи является рассмотрение принципов разработки серверной части веб-приложения по поиску стажировок на основе использования технологии Object Relational Mapping.

Для достижения поставленной цели необходимо решить следующие задачи:

- провести исследование архитектур клиент-серверных приложений;
- провести исследование методов аутентификации в веб-приложениях;
- провести обзор технологии Object Relational Mapping (ORM);
- реализовать серверную часть веб-приложения;
- разработать базу данных для хранения информации, используемой в приложении;
- реализовать авторизацию и аутентификацию в приложении;

Исследование архитектур клиент-серверных приложений

Клиент-серверная архитектура характеризуется наличием клиента и сервера – двух самостоятельных, взаимодействующих процессов.

Процессы, которые осуществляют функционирование базы данных называются серверами, процессы, которые запрашивают ресурсы у серверов путем запроса и последующего ожидания ответа от сервера, называются клиентами.

Существуют разные типы клиент-серверной архитектуры: одноуровневая, двухуровневая, трехуровневая и многоуровневая, [1].

В одноуровневой архитектуре прикладное программное обеспечение (ПО) распределено по отдельным единицам, которые обращаются к одному серверу. В таком случае сервер только предоставляет информацию в качестве ответа на запрос. Несмотря на то, что архитектура надежная, она довольно сложная в управлении, так как всех прикладных ПО информация будет находиться в разных вариациях, следовательно, потребуется выполнение синхронизации.

Двухуровневая архитектура предполагает присутствие прикладных программ, которые находятся на специальном выделенном сервере ПО. Программы-клиенты с пользовательским интерфейсом для взаимодействия с приложениями, размещены в рабочих единицах. Архитектура предоставляет простоту модификаций и конфигураций ПО, удобство работы, а также высокую производительность. Однако производительность может снижаться при повышении количества клиентов. Также из-за того, что вся информация хранится на одной

машине, могут быть проблемы с безопасностью. Кроме того, клиенты завязаны на базе данных одного производителя.

В трехуровневой архитектуре серверное аппаратное обеспечение – особый уровень, который предназначен для обслуживания сервера приложений. На сервере приложений находятся бизнес-логика и логика данных. Клиент с БД связывается с помощью специального промежуточного ПО, которое находится на сервере приложений, а не напрямую. Таким образом была улучшена вариативность функционирования, а также было обеспечено повышение продуктивности. Данная архитектура имеет много плюсов, таких как надежная защита БД, а также в целом хорошая безопасность в сравнении с предыдущими архитектурами, кроме того, плюсом является абсолютная целостность потока. Однако из-за промежуточного ПО структура взаимосвязи между сервером и клиентом существенно усложняется.

Использование многоуровневой архитектуры целесообразно, когда несколько серверов приложений применяют результаты друг друга, а также данные из других серверов.

Для моего приложения была выбрана трехуровневая архитектура ввиду количества пользователей, которые будут работать в данной системе, масштабируемости, интегрируемости, доступности из веб-браузера, высокой безопасности и дальнейшего обслуживания системы.

Исследование методов аутентификации веб-приложений

Практически любая система должна включать в себя такие элементы безопасности, как идентификация, аутентификация и авторизация.

Идентификация – определение идентификатора, по которому пользователь входит в систему, например по имени, логину, почте или номеру телефона. Аутентификация – проверка подлинности пользователя, например с помощью сравнения введенного пользователем пароля с паролем в БД. Авторизация – проверка того, что пользователь имеет к запрашиваемому ресурсу доступ.

Существуют различные методы аутентификации, такие как аутентификация по паролю, по сертификатам, по одноразовым паролям, по ключам доступа и по токенам, [2].

Аутентификация по паролю основывается на том, что пользователь вводит логин и пароль, которые задаются при регистрации, для успешной идентификации и аутентификации в системе. Этот способ не считается надежным, потому что пароль можно узнать или подобрать, так как некоторые пользователи используют простые пароли, либо свои идентичные пароли в других системах. При

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взломе в свою учетную запись, пользователь зачастую об этом не узнает.

Аутентификация по сертификатам основан на сертификате – наборе атрибутов, который идентифицирует владельца. Центр сертификации выступает в роли посредника, который подписывает сертификаты и гарантирует их подлинность. Сертификат связан криптографически с закрытым ключом, позволяющим однозначно подтвердить факт владения сертификатом и хранящимся у владельца. Сервер проверяет сертификат во время аутентификации и после успешного его прохождения веб-приложение выполняет авторизацию запроса на основании данных сертификата. Данный метод надежнее чем аутентификация по паролю ввиду наличия цифровой подписи, но данный способ является малодоступным из-за того, что трудно поддерживать и распространить сертификаты.

Аутентификация по одноразовым паролям реализует двухфакторную аутентификацию, когда пользователь предоставляет данные двух типов чтобы войти в систему, например, пароль, и то, чем он владеет. Таким образом, после проведения первичной аутентификации по паролю, у пользователя создается сессия, но он не имеет доступ к приложению в контексте этой сессии пока не пройдет дополнительную аутентификацию по одноразовому паролю. Такой способ значительно повышает уровень безопасности.

Аутентификация по ключам доступа в качестве секрета использует ключи доступа – длинные уникальные, произвольные наборы символов, которые заменяют привычные логин и пароль. Обычно сервер сам генерирует ключи доступа. Также можно ограничить уровень доступа и срок действия ключа. Такой способ позволяет избежать передачи пароля пользователя другим пользователям или системам, так как используется ключ доступа. Кроме того, ключи имеют большую энтропию, а значит, что их невозможно подобрать. Также если ключ был раскрыт, то можно аннулировать данный ключ, а затем создать новый.

Реализация аутентификации по токенам заключается в том, что Identity provider (поставщик идентификации) предоставляет токен, который содержит достоверные сведения о пользователе, а Service provider (поставщик услуг) пользуется этим токеном чтобы идентифицировать, аутентифицировать и авторизовать пользователя. Процесс аутентификации выглядит следующим образом:

- Пользователь проходит аутентификацию в Identity provider любым способом

- Пользователь просит Identity provider предоставить ему токен для конкретного service provider приложения. Identity provider создает и отправляет токен пользователю.

- Пользователь аутентифицируется в SP-приложении с помощью данного токена.

Токен содержит информацию о том, кто его сгенерировал, кто может быть его получателем, его срок действия, а также набор сведений о самом пользователе. Также токен подписывается для гарантии подлинности и предотвращения несанкционированных изменений.

Одним из самых распространенных форматов токенов являются JSON Web Token или JWT. Он содержит три блока: заголовок - header, набор полей - payload и подпись - signature, все они разделены точками. Заголовок и набор полей представлены в формате JSON и дополнительно закодированы в формат Base64. Подпись генерируется с помощью симметричных и асимметричных алгоритмов шифрования.

Для моего приложения была выбрана аутентификация по токenu в формате JWT, так как данный способ является стабильным решением для клиент-серверных приложений, [3]. Кроме того, в наборе полей (payload) можно записать дополнительную информацию о пользователе. Помимо этого, при аутентификации по токenu в формате JWT имеется возможность интеграции JWT-токенов со Spring Security, [4]. Следует также отметить, что для вычисления подписи в JWT-токене не используется пароль пользователя.

Технология ORM

Object-Relational Mapping (ORM) – это технология программирования, которая связывает базу данных с концепциями объектно-ориентированных языков программирования, создавая виртуальную объектную базу данных, [5].

Данная технология избавляет от написания SQL запросов. Использование технологии позволяет абстрагироваться от базы данных, а точнее от способа хранения данных в базе данных. Таким образом, можно работать с классами, отвечающими за бизнес логику, не задумываясь о том, в каких таблицах по факту все хранится.

Object-Relational Mapping позволяет работать с таблицами, полями и связями реляционной базы данных, как с объектами, свойствами и коллекциями. При разработке не нужно отвлекаться на подробности более низкого уровня, например, порядок выборки или генерации уникальных первичных ключей.

Программисту лучше, когда система является постоянным хранилищем объектов, где он может создавать объекты, работать с ними, а объекты будут автоматически сохраняться в реляционной базе данных.

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Но на практике все системы ORM обычно уменьшают возможность игнорирования базы данных. Также, слой транзакций может быть медленным и неэффективным. Следовательно, программы могут медленнее работать, а также использовать гораздо больше памяти, в отличие от программ, написанных вручную.

Однако данная технология избавляет от написания большого количества кода, который часто однообразный и подвержен ошибкам, благодаря этому скорость разработки и тестирования существенно повышается. Кроме того, множество современных реализаций ORM имеют возможность самому жестко задать код SQL-запросов при необходимости.

ORM – это дополнительный слой абстракций, создающий накладные расходы по использованию памяти и процессора. Также бывает, что становится неоптимально или неудобно работать с реляционной СУБД по сравнению с SQL-командами. Кроме того, SQL – это стандарт, в отличие от внутренних языков запросов в ORM. В то же время он поддерживает объектно-ориентированную работу с данными, прямое использование SQL и вызов хранимых процедур.

Критерии выбора ORM можно посмотреть на рисунке 1.



Рисунок 1. Критерии выбора ORM.

Если в системе основной упор делается на многокритериальный поиск и массированное извлечение информации, то использование ORM не является оправданным, оно излишне. Нет различия между табличным представлением информации в базе данных, внутри программы и на экране пользователя, все равно промежуточная обработка сводится к соединениям таблиц и простым пересчетам значений их полей. Однако, если система обрабатывает транзакции в реальном времени, проводит сложные расчеты, оповещает о событиях, здесь ORM имеет наибольшие

преимущества. Таким образом, технологию нужно использовать правильно и только в тех местах, где её использование оправдано.

Реализация серверной части

В серверной части используется трёхслойная архитектура. Запрос поступает на слой контроллеров, после он переходит на сервисный слой, затем он обращается к слою данных, который в свою очередь обращается к базе данных. Архитектура серверной части показана на рисунке 2.

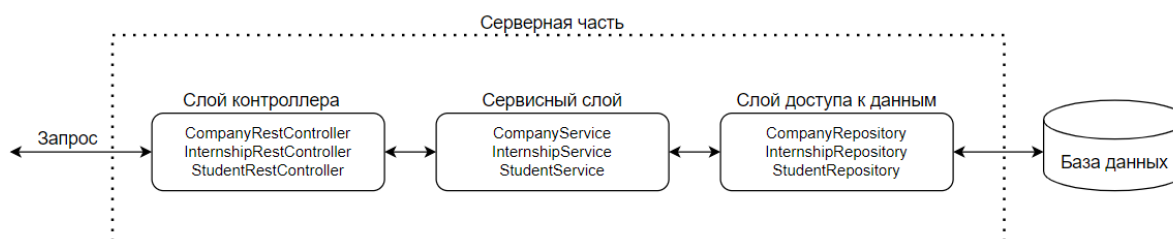


Рисунок 2. Архитектура серверной части.

С помощью технологии Object Relational Mapping реализуем программную модель доступа к данным, чтобы сохранять данные бизнес объектов и заполнять их данными из базы.

Чтобы создать объектные модели сущности базы данных, создадим классы с аннотацией @Entity. Данные классы являются объектами, которые представляют структуру и данные таблицы базы данных. В аннотации @Table нужно

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указать название таблицы, с которой данный класс будет связан. Аннотация `@Data` библиотеки Lombok позволяет использовать шаблонный код, например для методов получения или установления значений в поля класса. Каждому полю в классе соответствует столбец в таблице базы данных. Кроме того, с помощью аннотации `@Id` помечаем определенное поле как первичный ключ, который однозначно идентифицирует объект. Благодаря аннотации `@OneToMany`, `@ManyToOne` и `@ManyToMany` можно задать связи между таблицами, [6].

Слой доступа к данным представлен с использованием репозитория Spring Data, [7]. Каждая сущность имеет свой интерфейс репозитория. Данный интерфейс является интерфейсом-маркером. Репозиторий Spring Data может обнаружить данный интерфейс, а также автоматически создать базовую реализацию стандартных методов доступа к данным. Он принимает класс управляемой сущности и тип идентификатора в качестве generic-аргументов. Таким образом, репозитории значительно сокращают количество строк кода с помощью использования автоматически созданных функций для выполнения задач доступа к данным.

Кроме того, есть возможность создания собственных методов доступа к данным. Например, метод поиска пользователя по логину или метод, который позволит узнать, если ли пользователь с конкретным логином. Данные методы создаются легко благодаря строителю запросов в репозитории Spring Data. Например, можно объявить метод с названием `findBy` (название_поля), и тогда автоматически создастся

запрос поиска по полю, указанному в скобках после `findBy`.

Сервисный слой содержит всю бизнес-логику. Обращаясь к методам репозитория, можно взаимодействовать с сущностями, хранящимися в базе данных, а также реализовывать логику работы с ними. С помощью аннотации `@Service` помечаются классы, которые относятся к данному уровню. Затем, на уровне представления, когда будут созданы контроллеры, все методы будут обращаться именно к интерфейсу сервисов, а не напрямую к репозиториям.

Отправить и принять запросы с сервера можно с помощью REST API, [8]. REST – архитектурный подход взаимодействия компонентов приложения в сети. При выполнении клиентского запроса через RESTful API, сторона клиента передает стороне сервера представление о состоянии ресурса. Данное представление или информация отправляется через протокол HTTP в JSON формате. JSON является широко используемым форматом передачи данных, потому что он не зависит от языка, кроме того, он удобен для чтения и понимания. В REST API есть 4 метода HTTP, которые используют для действий с объектами: GET (получение информации о данных или списка объектов), DELETE (удаление данных), POST (добавление или замена данных), PUT (обновление данных).

В каждом HTTP-запросе есть заголовки запросов и заголовки ответов, и каждый из них имеет собственную информацию о HTTP-соединении и коды состояния.

На рисунке 3 представлена модель REST API.

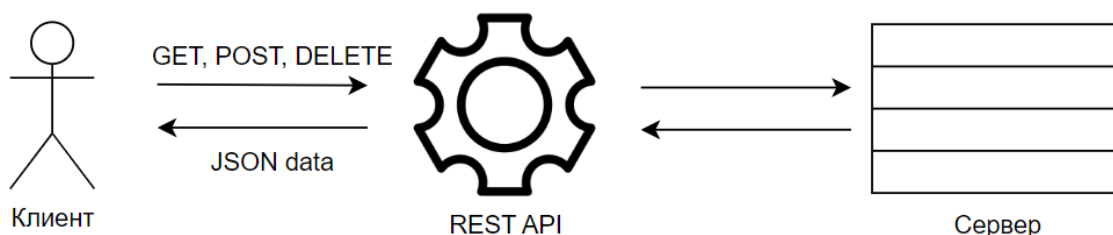


Рисунок 3. Модель REST API.

В рассматриваемом проекте реализованы классы контроллера, помеченные аннотацией `@RestController` – основные сущности для всего веб-уровня RESTful API. Контроллеры представляют самый верхний уровень в цепочке серверной архитектуры.

Запрос, имеющий корректное сопоставление, будет считаться действительным и в ответ клиенту отправляет код состояния 200, означающий, что запрос выполнен успешно, либо другой пользовательский код состояния. Если приходит запрос, не имеющий сопоставления, запрос будет

считаться некорректным и вернет клиенту код состояния 405, означающий, что метод запроса известен серверу, но был отключен или не может быть использован. Кроме того, добавляется HTTP-заголовок `Allow` к ответу для того, чтобы указать, какие операции можно применять. Если есть ошибка в запросе клиента, например получение пользователя с несуществующим `id`, то тогда определяются пользовательские сообщения об ошибках, которые сопоставляются с соответствующими кодами возврата.

Разработка базы данных

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Для проектирования базы данных системы нужно провести качественный анализ предметной области, чтобы в будущем модели были спроектированы правильно, и была повышенная эффективность работы с информацией. Предметная область – это часть реального мира, информация о которой будет содержаться в БД. Она состоит из объектов, которые характеризуются некоторыми свойствами.

Рассмотрим предметную область.

В веб-приложении по поиску стажировок могут зарегистрироваться пользователи с определенной ролью. Роль решает, кем является пользователь, он может быть либо компанией, либо студентом, либо администратором. Создание роли администратора позволит в будущем расширить приложение и добавить множество возможностей по улучшению сервиса. Информация о роли: уникальный номер, название.

О каждом пользователе имеется следующая информация: уникальный номер, уникальный номер роли, логин и пароль.

Пользователь может регистрироваться в веб-приложении как компания. Информация о компании: уникальный номер, уникальный номер пользователя, название, описание, электронная почта, адрес.

Компания может выложить одну или более стажировок. Каждая стажировка имеет свой уникальный номер, уникальный номер компании, название, описание, URL-ссылка на сайт и количество откликов.

Также каждая стажировка помечается одним или несколькими тегами, по которому можно легко ее найти с помощью фильтрации. Информация о теге: уникальный номер и название.

Пользователь может регистрироваться в веб-приложении как студент, который имеет возможность откликнуться на стажировки. Каждый студент имеет уникальный номер, уникальный номер пользователя, имя, фамилию, отчество, электронную почту и номер телефона.

Проведем инфологическое моделирование, что подразумевает разработку структуры базы данных, опирающуюся на смысл этих данных. Логическая модель ориентирована на человека, она помогает представить в наиболее доступном виде информацию. Основными элементами логической модели являются сущности, связи между ними и атрибуты.

Опираясь на анализ предметной области, выделяем 6 основных сущностей: «users», «roles», «company», «internship», «tag», «student»:

- Сущность «users» характеризуют атрибуты: id (уникальный номер), role_id

(уникальный номер роли), username (логин), password (пароль). Атрибут id – первичный ключ. Атрибут role_id – вторичный ключ, ссылающийся на атрибут сущности «role».

- Сущность «roles» характеризуют атрибуты: id (уникальный номер), name (название). Атрибут id – первичный ключ.

- Сущность «company» характеризуют атрибуты: id (уникальный номер), user_id (уникальный номер пользователя), name (название), description (описание), email (электронная почта), address (адрес). Атрибут id – первичный ключ. Атрибут user_id – вторичный ключ, ссылающийся на атрибут id сущности «users».

- Сущность «internship» характеризуют атрибуты: id (уникальный номер), company_id (уникальный номер компании), name (название), description (описание), url (URL-ссылка на сайт), responses (количество ответов). Атрибут id – первичный ключ. Атрибут company_id – вторичный ключ, ссылающийся на атрибут id сущности «company».

- Сущность «tag» характеризуют атрибуты: id (уникальный номер), name (название). Атрибут id – первичный ключ.

- Сущность «student» характеризуют атрибуты: id (уникальный номер), user_id (уникальный номер пользователя), first_name (имя), last_name (фамилия), patronymic (отчество), email (электронная почта), phone (номер телефона). Атрибут id – первичный ключ. Атрибут user_id – вторичный ключ, ссылающийся на атрибут id сущности «users».

Определяем связи между сущностями:

- Сущность «users» связана с сущностью «roles» идентифицирующей связью многие-к-одному.

- Сущность «internship» связана с сущностью «tag» идентифицирующей связью многие-ко-многим.

- Сущность «student» связана с сущностью «internship» идентифицирующей связью многие-ко-многим.

Чтобы реализовать связь «многие-ко-многим» с помощью ассоциативных таблиц, создадим даталогическую модель, так как в инфологической модели связь «многие-ко-многим» не может быть реализована. На рисунке 4 представлена даталогическая модель.

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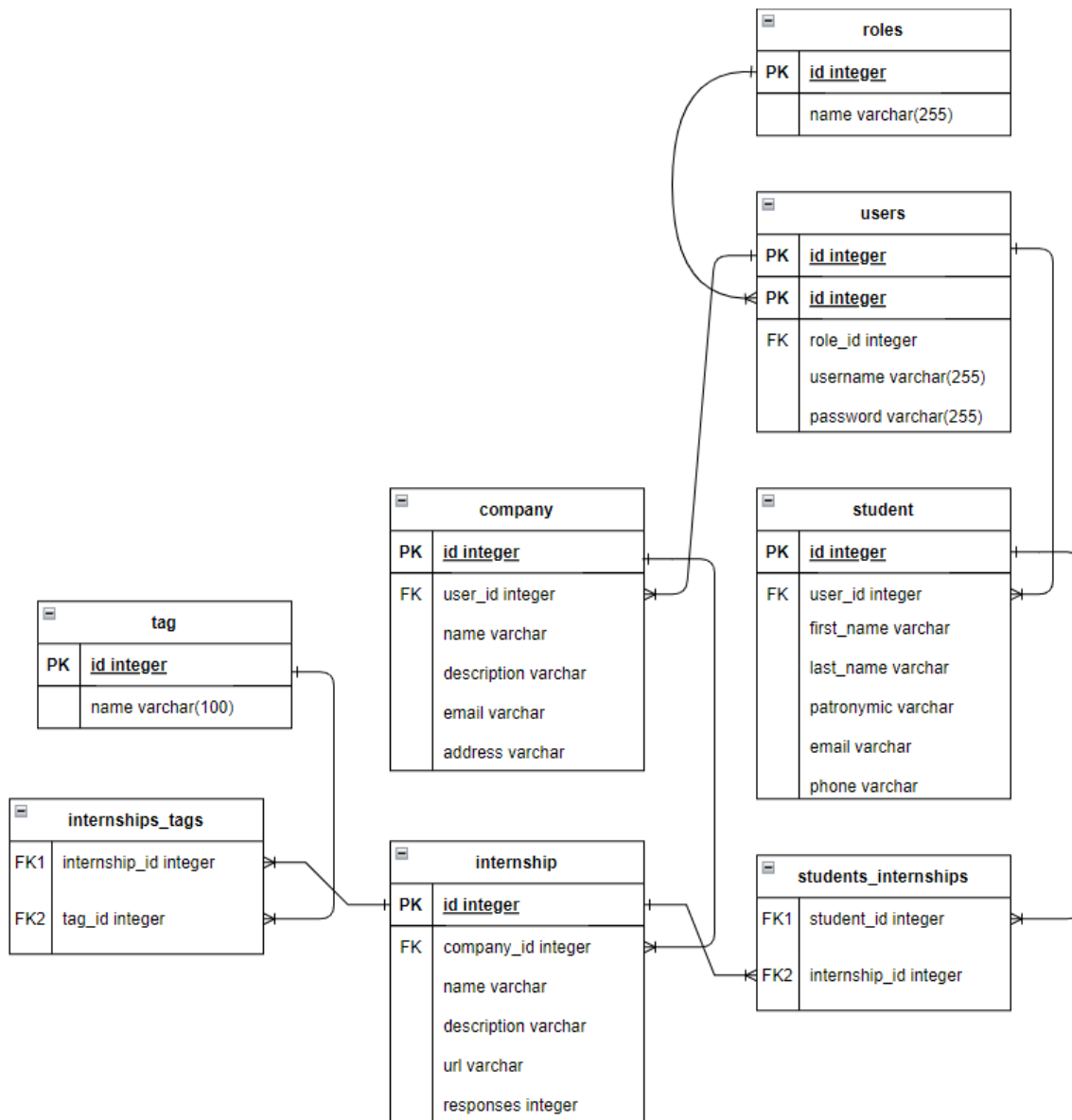


Рисунок 4. Дatalogическая модель.

Чтобы работать с базой данных, нужно создать таблицы, где будут храниться данные, [9]. Для создания таблиц базы данных создадим один скрипт SQL. Данный скрипт нужно запустить и все таблицы будут созданы в соответствии с

параметрами, которые были указаны при создании таблиц.

На рисунке 5 представлена часть SQL скрипта, которая создает таблицы `students` и `company`.

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```
V1_0_create_student_schema.sql ×
CREATE TABLE IF NOT EXISTS student
(
    id          SERIAL PRIMARY KEY,
    user_id     INTEGER,
    first_name  VARCHAR,
    last_name   VARCHAR,
    patronymic  VARCHAR,
    email       VARCHAR,
    phone       VARCHAR,
    FOREIGN KEY (user_id) REFERENCES users (id)
);

CREATE TABLE IF NOT EXISTS company
(
    id          SERIAL PRIMARY KEY,
    user_id     INTEGER,
    name        VARCHAR,
    description  VARCHAR,
    email       VARCHAR,
    address     VARCHAR,
    FOREIGN KEY (user_id) REFERENCES users (id)
);
```

Рисунок 5. Создание таблиц в скрипте.

В скрипте также создадим триггер, который в зависимости от выбранной роли пользователем создает либо компанию, либо студента.

Для последовательной вставки значений в таблицу создадим последовательность, у которого минимальное значение последовательности равно 1, отсчет начинается с 1 и инкремент равен 1.

На языке PL/pgSQL создадим триггерную процедуру `set_role` с возвращаемым значением типа `trigger`. В теле процедуры происходит проверка: если триггер сработал для команды вставки (`INSERT`), то в случае, если роль

пользователя является студентом, создаем и добавляем в базу данных нового студента, в случае если роль пользователя – компания, создаем и добавляем новую компанию в таблицу базы данных. Далее если триггерная процедура сработала для команды вставки, то возвращаем новую строку, иначе возвращаемое значение нулевое. Создаем сам триггер, который срабатывает после операции вставки (`INSERT`) таблицы `users_roles` и запускает триггерную процедуру для каждой строки, [10].

Создание триггера описано на рисунке 6.

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```
V1_0_create_student_schema.sql ×
CREATE SEQUENCE seq_for_trigger
  MINVALUE 1
  START WITH 1
  INCREMENT BY 1;

CREATE OR REPLACE FUNCTION set_role() RETURNS TRIGGER AS
$set_role$
BEGIN
  IF (TG_OP = 'INSERT') THEN
    IF (NEW.role_id = 2) THEN
      INSERT INTO student VALUES (nextval('seq_for_trigger'), NEW.user_id, NULL, NULL);
    ELSIF (NEW.role_id = 3) THEN
      INSERT INTO company VALUES (nextval('seq_for_trigger'), NEW.user_id, NULL, NULL);
    END IF;
    RETURN NEW;
  END IF;
  RETURN NULL;
END
$set_role$ LANGUAGE plpgsql;

CREATE TRIGGER set_role
  AFTER INSERT
  ON users_roles
  FOR EACH ROW
  EXECUTE PROCEDURE set_role();
```

Рисунок 6. Создание триггера в скрипте.

Реализация авторизации и аутентификации

В качестве метода для авторизации и аутентификации был выбран JWT токен вместе со Spring Security.

Авторизация и аутентификация была реализована с помощью 4 классов:

- AuthTokenFilter – фильтр токенов при каждом запросе к серверу;
- JwtUtils – фильтр пользовательских данных для выдачи токена при логине
- AuthRestController – класс, хранящий характеристики токенов, методы для их добавления и получения;
- SecurityConfiguration – конфигурация для настройки доступа.

Схема работы с использованием JWT токена следующая: пользователь входит в систему, вводя логин и пароль. При успешной аутентификации сервер создает новый JWT токен и отправляет его пользователю. При последующих запросах токен передается в заголовках запросов. Получив токен, сервер проверяет, является ли данный токен именно тем токеном, который был сконфигурирован на шаге аутентификации, [11].

Кроме того, JWT токен не хранится на сервере. Он проверяется на подлинность каждый раз.

Схема работы с JWT токеном представлена на рисунке 7.

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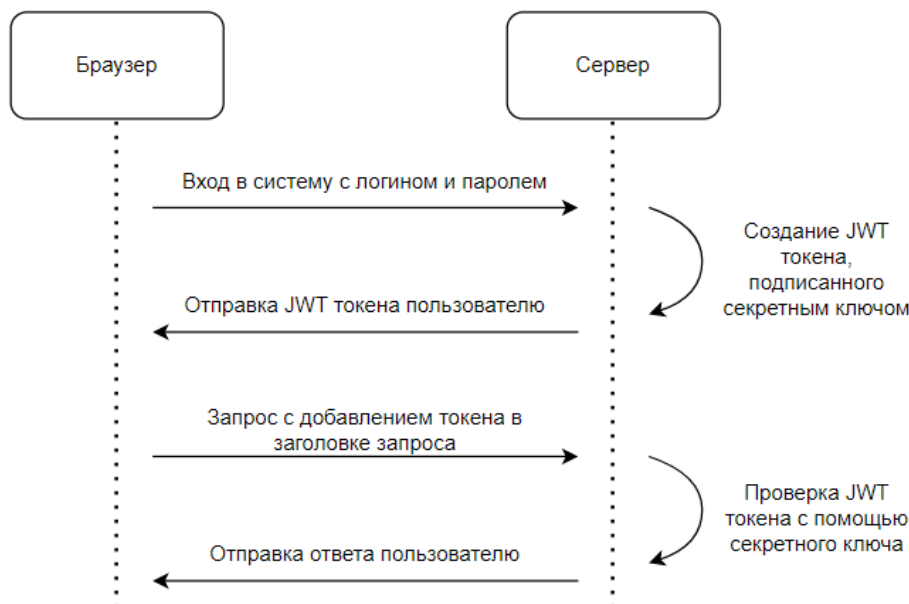


Рисунок 7. Схема работы с JWT токеном.

Рассмотрим процесс выдачи токена пользователю на сервере при аутентификации, то есть при выполнении входа. Данный процесс выполняется в классе: JwtUtils.

Алгоритм работы JwtUtils, следующий:

- Из запроса на вход в систему извлекаются имя пользователя, пароль.
- С помощью метода `authenticate` у `AuthenticationManager` проверяется валидность пользователя, если данные не верны, то выбрасывается исключение `AuthenticationException` и процесс завершается.
- Если данные верны, то начинается формирование токена. В него записывается время жизни токена, а также с помощью алгоритма HS512 ставится зашифрованная подпись.
- Создаётся cookie, куда записывается сам токен и заголовок `Bearer`.
- Cookie отправляется клиенту.

Таким образом, JWT-токен выдается пользователю. При каждом запросе к серверу клиент отправляет токен. Серверу при каждом запросе нужно выполнить проверку данного токена и извлекать из него имя пользователя. Данный процесс выполняется в классе-фильтре: `AuthTokenFilter`, который расширяет `OncePerRequestFilter`.

Алгоритм работы данного класса, следующий:

- Из заголовка извлекается JWT токен при каждом запросе к серверу.
- Извлекаем из токена имя пользователя и список полномочий `authorities`.
- Проверяется валидность токена: с помощью хеш-функции токен проверяется на основании секретной подписи.
- В случае если все прошло успешно, то с помощью имени пользователя и списка полномочий `authorities`, создается объект типа `UsernamePasswordAuthenticationToken`, названный `authentication`. Затем он регистрируется в `SecurityContext`.
- В случае если было выброшено исключение, фильтр не сможет к защищенному URL пропустить запрос в контроллер.

Выводы

Таким образом, в статье проведен обзор возможностей технологии программирования `Object Relational Mapping (ORM)` и продемонстрирована эффективность использования этой технологии при разработке серверной части веб-приложения, на примере, приложения по поиску стажировок.

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M. G. Grdzeldze
Akaki Tsereteli State University
Ph.D.
Professor of the Department "Design and Technology",
Dean of Engineering-Technological Faculty
Georgia, Kutaisi



N. N. Tkheldze
Akaki Tsereteli State University
Ph.D.
Engineering Sciences PhD. Associate Professor,
Head of Department Design and Technology,



I. J. Charkviani
Akaki Tsereteli State University
Ph.D.
Georgia, Kutaisi

FOOT AND SHOES - AN IMPORTANT SCIENTIFIC PROBLEM

Abstract: The study confirms that in the industry little attention is paid to the implementation of the results of the latest research conducted by scientists in order to solve the most important problems of consumer properties of shoes. A significant role in the development of scientific research on the pathology and deformities of the feet and the design of rational footwear has been played by the fact that recently research has often been carried out in this direction, and this topic is often included in the research plans of the relevant organization. To solve this problem, a number of studies and experiments were carried out regarding the diagnosis of the foot, in the direction of the formation of new standards and the identification of the distribution of pathological abnormalities among the population. For this, a number of combinations of consumer parameters of footwear were processed and an experimental batch of an experimental study was made, for which a size and width range of the study group was created.

Key words: production, shoes, parameters.

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СТОПА И ОБУВЬ — ВАЖНАЯ НАУЧНАЯ ПРОБЛЕМА

Аннотация: Исследование подтверждает, что в производстве мало внимания уделяется к внедрению результатов новейших исследований, которые проводят учёные, с целью решение важнейших проблем потребительских свойств обуви. Значительную роль в развитии научных исследований по вопросам патологии и деформаций стоп и конструирования рациональной обуви сыграло то, что последнее время часто проводятся исследования в этом направлении, и эта тематика часто включается в планах научно-исследовательских работ, соответствующих организации. Для решения поставленной задачи было проведено ряд исследований и экспериментов, касающей диагностики стопы, по направлению формирования новых стандартов и выявления распределения патологических отклонении среди населения.

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Для этого был обработан ряд сочетаний потребительских параметров обуви и было изготовлено опытная партия экспериментального исследования, для чего было создано размерно-полнотный ассортимент исследуемой группы.

Ключевые слова: производство, обувь, параметры.

Введение

В условиях современной техники и технологии, во всех сферах промышленного производство возросло степен автоматизации производства. Но, только в обувном производстве увеличилась доля ручной работы. С одной стороны, это объясняется с тем, что обувь действительно относится к числу изделий, которые должны быть изготовлены с ювелирной точностью, так как от ее удобства и точности прилегания к стопе абсолютно зависит ежедневный комфорт и состояние здоровья человека, как для опорно-двигательного аппарата, так и для обеспечения гармоничного функционирования нервной системы. А с другой стороны, средние и малые предприятия предпочитают производить обуви без наибольших затрат, поскольку автоматизация и механизация обувного производства требует больших капиталовложения, исходя из многочисленных разных технологических операции, которые (в зависимости от вида обуви) требует много разных, дорогих машин, автоматов и приспособления, что в свою очередь, сделает продукцию дорогим и недоступным для множества потребителей.

Когда речь идёт об изготовлении рациональной обуви, весьма важным является отношение и осведомленность общества о потребительском качестве обуви.

Исследование подтверждает, что в производстве мало внимание уделяется к внедрению результатов новейших исследований, которые проводят учёные с целью решение важнейших проблем потребительских свойств обуви. Необходимо концентрировать усилия ученых на укрепления связи науки с практикой, ускорения применения ее достижений в обувном производстве. Особое значение имеет необходимость, более широко развивать научные исследования по важнейшим проблемам подиатрии и здравоохранения, улучшить планирование научно-исследовательских и опытно-конструкторских работ по направлению использованных материалов и оптимизации внутренней формы повседневной обуви, предусматривая в планах все этапы этих работ, вплоть до внедрения их результатов в производство.

Анализируя все факторы сложной цепи потребительских свойств в системе «стопа-обувь», важно, что наиболее слабыми являются звенья, связанные с практической реализацией результатов исследования, с их внедрением в массовое производство. Для того, чтобы

производить продукцию, соответствующую современным вызовам и преодолеть существующие трудности, нужно, с одной стороны, обеспечить еще больший спектр исследования по направлению спроса и обеспечение населения качественной с точки зрения удобства и комфортности обуви, с гигиеническими материалами, т.е. поворот соответствующих научных исследований к наиболее важным задачам производства. И с другой стороны - создать такие условия, которые заставили бы предприятия выпускать новейшие образцы продукции, буквально соответствующий с растущими потребностями населения, не игнорируя визуальной стороны и соответствия современной моды.

Постепенный подъем материального благосостояния и культурного уровня населения, повышает требования к работникам всех отраслей сферы обслуживания, что в первую очередь обусловлено удобством предметов личного потребления. Здоровое молодое поколение и высокий процент здоровых пожилых людей – показатель полноценного развития страны. XXI век характеризуется направлением на дальнейшую гуманизацию среды обитания человека и, соответственно, нормализацию всех связанных с ней проблем. Поэтому, важным вопросом является стандартизация предметов личного потребления. От правильного решения этой задачи зависит удовлетворение растущих потребностей населения. Среди таких вещей особое место занимает обувь, ведь от ее правильного выбора во многом зависит комфортное самочувствие человека. Например, удобство – один из важных аспектов качества обуви, подразумевающий правильное соотношение формы и размера стопы к обуви [1, 2, 3]. Таким образом, необходимым условием обеспечения населения удобной обувью является обеспечение ее по рациональным размерно-полнотным ассортиментом. Разработка такого ассортимента требует массовых измерений и изучения стоп населения, учитывая разнообразных патологии стоп, распространение которых среди населения весьма существенно [2, 4, 5, 6].

Значительную роль в развитии научных исследований по вопросам патологии и деформаций стоп и конструирования рациональной обуви сыграло то, что последнее время часто проводятся исследования в этом направлении, и эта тематика часто включается в

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планах научно-исследовательских работ, соответствующих организации.

Для решения поставленной задачи было проведено ряд исследований и экспериментов, касающейся диагностики стопы, по направлению формирования новых стандартов (который не обновлялся последние 40 лет) и выявления распределения патологических отклонений среди населения (поскольку исследование показывает, что процент нарушения нормального состояния стопы возросло, по сравнению предыдущих результатов исследования) [5, 7, 8, 9, 10]. В целом, функциональные нарушения опорно-двигательного аппарата населения, и особенно для детей и подростков, связаны с деформациями костно-суставного аппарата, что является одной из основных причин снижения умственной и физической работоспособности.

Исходя из биомеханики движения человека, стопа является основой опорно-двигательной системы, и даже незначительное отклонение от нормы приводит к нарушению всей конструкции. Около 80% населения мира имеют проблемы (разной степени) опорно-двигательного аппарата, что связано с деформациями стопы и, соответственно, вызываемыми ею патологиями.

Основная задача производителей обуви – удовлетворять население красивой и удобной обувью. Практика показала, что на улучшение сбыта обуви влияет не только ее визуальный аспект, т. е. фасон (силуэт), модель (конструкция и взаимосвязь деталей), гигиеничность отдельных материалов и технология сборки заготовок и в целом обуви, но и ее утилитарные свойства: рациональная форма опорной части обуви

(соответствующей к плантарной поверхности стопы), правильное соотношение размеров в системе «стопа-обувь», жесткость обуви (при изгибе и разведение стоп, при опоре), масса, гигиеничность пакета материалов, содержание химико-токсикологических веществ, влагообмен, теплопроводность, теплозащита, электропроводность и др., так называемый физико-гигиенические свойства, играющие важнейшую роль в нормальном функционировании не только стопы, но и всего организма. Игнорирование их во многих случаях является причиной различных патологий.

Проведенные за последние годы массовые размерные и функциональные диагностики стоп населения, с учетом их пола и возраста показали, что с ростом детей происходит увеличение процента патологических стоп [4, 7, 8, 9, 11, 12]. Например, большой процент плоскостопия у детей объясняется следствием незаконченного развития свода, который у человека в филогенезе является образованием поздним. Полученные данные предоставили возможность правильно подходить к лечению плоскостопия (и других патологии стоп) у детей, не назначать поголовно ортопедическую обувь и ортопедические стельки.

Что касается деформации стоп у взрослого населения, большинство из них вызвано неудобством обуви повседневного назначения, в том числе разнообразны и профессиональные заболевания (исследование и опрос населения во всех возрастных группах проводились одновременно, одноразовым методом исследования) (таб. 1, рис. 1) [13, 14, 15].

Таблица 1. Распределение патологии стопы в популяции по вызывающим факторам

Группа населения	Приблизительный процент разных патологии (разной степени) в группе (%)	Врожденный (%)	Приобретенная с возрастом (возрастные патологии, вызванные внутренними заболеваниями) (%)	Приобретенная травмами и другими подобными факторами (%)	Приобретенная неудобной обувью (%)
Дети 5-9 лет	42,3	39,1	-	0,12	2,08
Дети 10-16 лет	49,7	39,3	-	3,11	7,29
Взрослые 17-35 лет	57,94	37,2	0,78	4,23	15,73
Взрослые 35-55 лет	76,8	22,7	9,19	7,8	37,11
Взрослые Старше 55 лет	89,1	21,93	17,15	9,55	40,47

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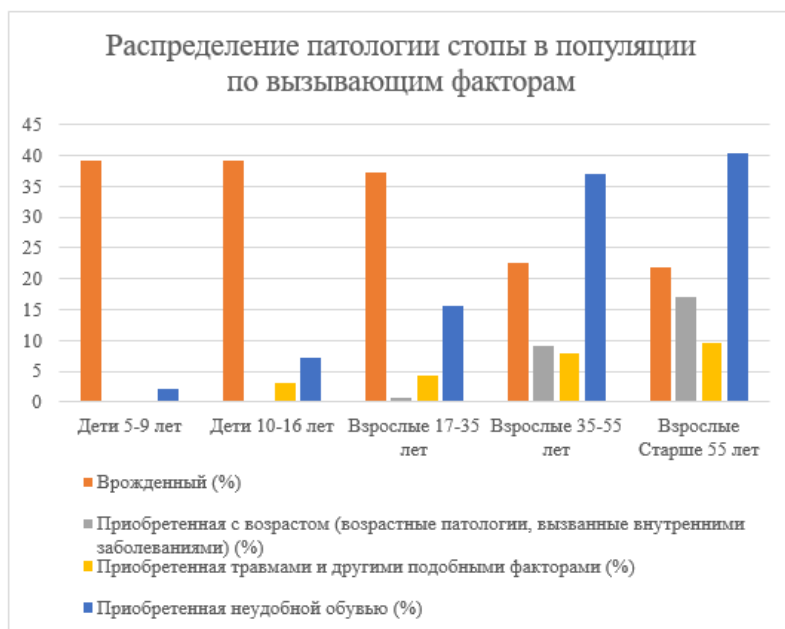


Рисунок 1. Распределение патологии стопы в популяции по вызывающим факторам.

Надо отметить, что населениям возрастом более 40 лет, мало информации имеет о собственном врожденном патологии стопы и дали приблизительный ответ. С этим объясняется низкий процент врожденной патологии у взрослых. Что касается приобретенных патологии, в их числе объединены патологии: вызванные внутренними заболеваниями и неудобной обувью, которые в свою очередь включает в себя ряд патологии:

1) Патологии, вызванные внутренними заболеваниями, которые могут вызвать другие сопутствующие заболевания: ангиопатические, нейропатические и комбинированные (смешанные) формы (в том числе деформации опорно-двигательного аппарата). В числе комбинированных заболеваний входит: ангиопатия с нейропатией; ангиопатия с остеоартропатией; ангиопатия с гиперкератозом; ангиопатия с нейропатией и остеопатией; ангиопатия с флегмоном; ангиопатия с язвом (в том числе диабетическая язва); остеопатия с гиперкератозом; нейропатия с ангиопатией, с остеопатией и с язвом (в том числе диабетическая язва); нейропатия с остеопатией, нейропатия с «невромом Мортон» [16];

2) Патологии разной степени, вызванные неудобной обувью: Вальгусная деформация большого пальца, молоткообразные пальцы, когтеобразные пальцы, мозоли (на пальцах и/или на плантарной части стопы), разные типы механических язв, Неврома Мортон, боли в суставах пальцев, боли в голеностопном суставе, осложнения: плоскостопии, избыточной пронации, подагры, пяточной шпоры, диабетической стопы, ангиопатий, остеоартритов и нейропатий и другие разнообразные патологии,

деформации и отклонения разной степени (патологии легкой, средней и сложной тяжести).

Перед исследователями стала задача, путем тщательного динамического наблюдения за стопами населения, выявить те совокупности, которые приобрели деформации стоп, или получили осложнение существующей патологии с использованием неудобной обувью. То, что патология стопы с возрастом прогрессирует, это уже многократно было доказано с путем многочисленных наблюдений [15].

Конкретнее стали задачи профилактики и лечения. С целью внедрения в практику полученных данных, разработана ряд рекомендации и методическое пособие, распространение которых включено в плане исследовательских работ. Для улучшения снабжения рынка удобной обувью, было разработана стандартные данные, внедренные которых будет обоснованно только после опытной эксплуатации партии обуви, созданной по этих данных. Опытная партия было создано для взрослого населения, в большинстве которых отмечены патологии, приобретенные неудобной обувью (в основном вальгусная деформация большого пальца, мозоли (на пальцах), разные типы механических язв, Неврома Мортон, боли в суставах, осложнения плоскостопии, подагра, пяточная шпора и диабетическая стопа. Большинство лиц, включенных в эксперименте, ведет активный образ жизни, и неудобная обув вызывает дискомфортные ощущения разной направлении.

Задача состояла в том, чтобы создать обув как комфортного, так и ортопедического (точнее, лечебного) назначения. Для этого был обработан ряд сочетаний потребительских параметров

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обуви, из натуральной кожи, на подошве из износостойких, с мягких и упругих полимерных материалов, или пористой резины, способствующей хорошей амортизации при ходьбе [1, 5, 7, 16]. Размерно-полнотный ассортимент опытной партии было создано специально для исследуемой группы [2, 4].

Ортопедическая обувь должен иметь научно-обоснованный число полнот (больше, чем бытовая обув). В процессе расчёта размерно-полнотного ассортимента к расчёту числа интервала полнот было уделено особое внимание. Особое значение этот вопрос приобретает в связи с отличием размеров патологических стоп от нормальных, а также в связи с необходимостью использования в обуви ортопедических элементов, поскольку абсолютная большинство ортопедической обуви укомплектована вынимаемыми стельками или полустельками с соответствующей плантарной части стопы анатомически правильными параметрами, обладающими профилактическими и терапевтическими свойствами.

Ортопедическая обувь терапевтического назначения предназначена для людей с проблемными ногами должно иметь оптимально рассчитанный внутренний объем, а не просто большая, как считают изготовители обуви. Во время проектирования объема передней части обуви, должно строго учитывать закономерности размерных признаков стопы. Существующие в настоящее время многочисленные фирмы ортопедической обуви не соблюдают эти закономерности, что подтверждается изучением партии их обуви. С увеличением одной части

обуви должно соответственно иметь влияние на других частей, и это соответствие должно рассчитано точно, соблюдая все методики, которые настоящее время уже существует [2, 4, 7, 9, 17, 18] и было использовано для изготовления экспериментальной серии обуви в лабораторных условиях (табл. 2-10) [21-26]. Остальные требования для ортопедической обуви, касающийся конструкции и материалов, многократно было перепроверено, уточнено и опубликовано нами и наши рекомендации во многих партиях обуви было успешно использовано, что в свою очередь вызвал положительный отклик со стороны пользователей. Мониторинг состояние стоп и качество используемой обуви проводилась по за ранее расписанной графики, потребители были с нами в постоянном контакте и были учтены все их замечания и пожелания [19, 20]. Это привело к тому, что после завершения экспериментальной опытной эксплуатации, получили полноценные образцы партии ортопедической обуви. С использованием метода аппроксимации конструированных грунт-моделей, пакета основных и вспомогательных деталей верхней и нижней части обуви, было разработано оптимальная система размерно-полнотного ассортимента, система возрастно-половой классификации и конструкция ортопедической обуви для массового производства. К сожалению, в стандартах не учитывается пожилой возраст населения (табл. 2). Исследованием многократно было доказано, что это группа нуждается особого подхода [1, 16, 19].

Таблица 2. Основные статистические характеристики диабетической стопы пожилых

Среднее значение размерного признака	Длина стопы	Обхват внутреннего пучка	Обхват наружного пучка	Обхват в середине стопы	Ширина внутреннего пучка	Ширина наружного пучка	Ширина Пяточной части
Женщины	249,82 5	234,325	238,375	242,975	95,200	94,375	72,575
Мужчины	272,65 9	255,085	261,622	264,280	105,756	104,573	78,098

Для расчета полнотного ассортимента, с помощью программы, составленной на основе специального алгоритма необходимы следующие данные (табл. 3):

L_1 - минимальное значение длины стопы в совокупности выборочного населения;

R_1 - минимальное значение обхвата стопы в сечении $0,68/0,72 L$;

h_R - интервал полнот;

n_n - число полнот для каждого размера;

n_L и n_R - число распределения по L и R (это значение нужно для расчета числа, по

формуле Симпсона, в нашем случае примем равным 10);

\bar{L} - среднее значение длины стопы;

\bar{R} - среднее значение обхвата в пучковой части;

σ_L - среднеквадратичное отклонение размера стопы;

σ_R - среднеквадратичное отклонение обхвата в пучковой части;

$r_{L,R}$ - коэффициент корреляции;

n_N - число размеров обуви в совокупности.

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Таблица 3. Исходные данные для расчёта размерно-полнотного ассортимента

Параметр		Возрастно-половые группы						
		2	3	4	5	6	7	8
\bar{L}	mm	155,8	180,1	208,2	234	236,7	239,9	261,4
\bar{R}	mm	160,7	172,7	192,3	210	213,8	221,7	235,3
\bar{W}	mm	62,23	68,34	74,7	83,05	84,89	88,6	95,3
σ_L	mm	9,6	13,37	13,6	11,6	13,3	10,1	11,2
σ_R	mm	9,4	10,24	11,96	13,6	13	12,5	13,9
σ_W	mm	4,3	5,19	5,34	6,6	5,8	5,4	5,9
$r_{L,R}$		0,59	0,6	0,61	0,49	0,58	0,37	0,61
$r_{L,W}$		0,42	0,58	0,56	0,57	0,59	0,57	0,6
$r_{R,W}$		0,45	0,52	0,57	0,65	0,61	0,69	0,69
h_L	mm	5	5	5	5	5	5	5
h_R	mm	6/8	6/8	6/8	6/8	6/8	6/8	6/8
h_W	mm	3	3	3	3	3	3	3
n_{sistr}		3	3	3	3	3	3	3
n_1		10	10	10	10	10	10	10
n_2		10	10	10	10	10	10	10

Таблица 4. Процентное соотношение полнот в совокупности по теоретическим и эмпирическим данным

Интервал полнот (мм)			Номер возрастной группы							Среднее значение
			2	3	4	5	6	7	8	
Теоретическое распределение	6	Узкий	28	30	32	31	30	31	32	30
		Средний	40	40	38	37	38	37	36	38
		Польный	32	30	30	32	32	32	32	32
	8	Узкий	27	29	31	32	30	32	31	30
		Средний	44	43	41	39	41	39	39	41
		Польный	29	28	28	29	29	29	30	29
Эмпирическое распределение		Узкий	24	23	25	23	25	26	25	25
		Средний	48	47	45	48	49	42	47	46
		Польный	28	30	30	29	26	32	28	29

Таблица 5. Рациональный размерно-полнотный ассортимент населения Грузии.

Группа №	2	3	4	5	6	7	8
Исходная полнота мм	160	172	192	210	214	222	235
Интервал полноты мм	6	6	8	8	8	8	8
Исходная ширина следа мм	62	68	75	83	85	89	95
Интервал ширины мм	3	3	3	3	3	3	3
	140	6					

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Размер обуви	145	10.5						
	150	15.5						
	155	20.5						
	160	21	2.5					
	165	15	6					
	170	9.5	9.5					
	175	2	13.5					
	180		15.5					
	185		15	2.5				
	190		14.5	6				
	195		12.5	9				
	200		7	11.5				
	205		4	15				
	210			16	4	3.5		
	215			13.5	7.5	5	1	
	220			10	12.5	9.5	1.5	
	225			8.5	16	12	9	
	230			6	16.5	15.5	16.5	
	235			2	17	16	19.5	1
	240				13	14.5	19	3.5
	245				8	11.5	15	8.5
	250				4.5	7	10	13.5
	255				1	4	5	14
260					1.5	0.5	17.5	
265							16.5	
270							13.5	
275							8	
280							3	
285							1	

Таблица 6. Рекомендуемые виды обуви

Группа	Виды обуви	Размеры	Число полнот	Высота каблука
5	Девочка Туфли, полуботинки, ботинки, полусапоги	205-258	3	20-30
6	Мальчик Полуботинки, ботинки, полусапоги	206-285	3	15-25
7	Женщины Полуботинки, ботинки, полусапоги	221-275	3	с- 20
8	Мужчины Полуботинки, ботинки, полусапоги	242-305	3	15-25

Примечание: В зависимости от состояния стопы и конструкции заготовки, для фиксации на стопу, обуви может быть оснащена: молниями, шнурками, пряжками или резиновыми лентами.

Технические требования (табл. 7-10):

Таблица 7. Допустимые толщины деталей обуви для верха и подкладки

№	Названные детали	группа	Толщина деталей (мм)						Участки кожи, из которых должно вырезаться деталь
			Шевро	Козья шкура	телячья кожа	Выросток	Замше	Кожа для подкладки	
1.	Союзка, носок, внешний	детская взрослая	0,5-0,9 0,6-1,1	0,6-1,0 0,7-1,2	0,7-1,2 0,8-1,3	0,8-1,3 0,9-1,4	0,7-1,2 0,8-1,3	0,6-1,1	Чепрак

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	задний ремень, ремень для крепления								
2.	Берец, задник	детская взрослая	0,6-0,9 0,6-1,1	0,7-1,0 0,7-1,1	0,7-1,1 0,7-1,2	0,7-1,2 0,8-1,3	0,6-1,1 0,7-1,2	0,6-1,1	Со всех плотных участков кожи, кроме поля
3.	Язычок, надблочник, подомный ремень	детская взрослая	0,5-10 0,5-1,0	0,6-1,1 0,6-1,1	0,5-1,0 0,5-1,0	0,5-1,0 0,5-1,0	0,6-1,1 0,6-1,1	0,6-1,1	Со всех плотных участков кожи
4.	Кожподкладка, вкладная стелка, внутренний задний ремень,	детская взрослая	- 0,6-1,0	0,6-1,0 0,6-1,0	0,6-1,0 0,6-1,0	0,6-1,1 0,6-1,1	-	0,6-1,1	Со всех плотных участков кожи
5.	Голенище, перед	детская взрослая	0,6-1,1 0,7-1,2	0,6-1,1 0,7-1,2	0,7-1,2 0,8-1,3	0,8-1,3 0,9-1,4	-	0,6-1,1	Со всех плотных участков кожи, кроме поля
6.	Голенище, берци	детская взрослая	0,5-1,1 0,6-1,1	0,6-1,0 0,6-1,1	0,6-1,1 0,6-1,1	0,7-1,2 0,7-1,2	-	0,6-1,1	Со всех плотных участков кожи, кроме поля

Таблица 8. Толщина деталей низа в готовой обуви

№	Названные деталей	Меток крепления низа	Название материала	Толщина деталей в готовой обуви (мм)		Участки кожи, из которых должно вырезать деталь
				обув для детей	обув для взрослых	
1.	Подошва	клеевой, сандальный	Кожа крупного рогатого скота	3,1- 3,6	3,7- 4,2	чепрак
2.	Резиновая подошва	клеевой, литьевой, строчечно-клеевой	пористая резина марки «В» по ГОСТ 12632-79	не менее 6,0	не менее 6,0	--
3.	Стелка	клеевой, литьевой	Кожа крупного рогатого скота	1,8- 2,1	2,0- 2,3	хорошо сглаженный вороток и поля
4.	Платформа	строчечно-клеевой	Войлок полувалянная	4 - 8	4 - 8	--
5.	Задник	для всех метод	кожа ГОСТ 1903-78	2,1- 2,3	2.3- 2,5	чепрак и хорошо сглаженный вороток и поля
6.	Подноска	для всех метод	кожа ГОСТ 1903-78	1,6- 1,9	2,0- 2,3	чепрак и хорошо сглаженный вороток и поля
7.	Резиновая пятка	для всех метод	формированная пористая резина ГОСТ 12632-79	по образцу	по образцу	-
8.	Супинатор	для всех метод	металь	-	-	-

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9.	Прастилка	клеевой, литьевой	смесь шерсти и хлопкового волокна	-	-	-
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Таблица 9. Прочность соединения деталей заготовки

Материал для верха	разрушающая нагрузка на 1 мм длины шва для каждого образца		метод испытания
	одинарный шов	двойной шов	
телёнок, выросток, в комбинации с тканью	8,5	11,0	ГОСТ 9290 – 76
шевро, козлиная, замше	7,0	8,0	ГОСТ 9290 – 76

Прочность крепления низа к заготовке при клеевом и литьевом методе должна соответствовать нормам, приведенным в таблице 10.

Таблица 10. Прочность крепления низа к заготовке при клеевом и литьевом методе.

материал подошвы	прочность крепления не менее кг/см	метод испытания
кожа	13,0	ГОСТ 9292-82
пористая резина	18,5	
монокристаллическая резина		
полиуретан		

Для создания рациональной обуви, должно учитывать все выводы, что были достигнуты в результате многочисленных исследований, потому, что неудобная обувь не только выброшенные деньги, но и множество приобретённых и прогрессирующих заболеваний: плоскостопие, варикозное расширение вен, вросшие ногти, молоткообразные пальцы, вальгусная деформация стопы и большого пальца, неврома Мортона, мозоли, натоптыши и т.д. [29-32]. Врачи-подиатры нередко называют эти проблемы «обувными», так многие заболевания стоп провоцируются именно неправильно подобранной обувью.

Перед изготовителями ортопедических деталей обуви, постоянно стоят задачи обеспечения населения ортопедическими приспособлениями. Идеальным считался принцип индивидуального изготовления ортопедических стелек с последующим контролем ортопеда при их использовании. До настоящего времени невозможно приобрести детали для превенции деформации и терапии вышеперечисленных болезненных явлений. Без такого приспособления, повседневная обувь не облегчит, а только поспособствует прогрессированию этих деформаций. Кроме этого, несмотря на то, что стандарты учитывают, многочисленными исследованиями доказано и в планах обувных предприятий формально предусмотрено необходимое количество полнот, практически до покупателя доходит обувь одной полноты. Это слишком мало, чтобы с одинаковой длиной стопы

потребителей могли подобрать себе рациональную обувь. Для части покупателей она будет узка, другим слишком широка и фактически нерациональна. Процент удовлетворения не превышает 35%, так как при изготовлении обуви по трём полнотам, достигает до 80-85% [2, 4, 11]. Особо много нареканий среди людей старшего среднего возраста 50-60 лет, которые даже без выраженных деформаций стоп нуждаются в обуви повышенных полнот, по сравнению с действующими полнотами.

Особое внимание должно быть уделено профилактике заболеваний и деформаций стоп, начиная с раннего детского возраста. С этой целью рекомендуется динамическое наблюдение за развитием стоп детей, диагностика ранних патологии, их диспансеризация при подозрении на развитие статических деформаций стоп и своевременное профилактика, и лечение. Необходимо углублять комплексные физиологические, биомеханические исследования с целью изучения патофизиологических сдвигов при деформации стоп, а также для разработки методов терапии с прогрессированием уже развивавшихся деформаций.

Учитывая акселерацию детского населения, вопрос о снабжении обувью старших детей и подростков требует пересмотра и радикального решения с тем, чтобы обеспечить их соответствующей обувью, учитывая вредное влияние обуви для взрослых, которой они вынуждены пользоваться [4, 27, 28].

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Учитывая большую вариабельность стоп в их строении, следует наряду с усовершенствованием конструкции колодки, особое внимание обратить на повышение качества используемых материалов с целью уменьшения веса, жесткости и улучшение других качеств обуви.

В связи с увеличением процента населения пожилого возраста вопрос об обеспечении этой группы населения рациональной обувью заслуживает особого внимания. Одной из неотложных задач является обеспечение достаточного количества больших полнот, использование доброкачественных материалов для обуви, отвечающих гигиеническим требованиям.

Целью учёных и практических деятелей должно быть вести исследование по вопросу стопы и обуви постоянной взаимосвязи и должны трудиться еще более широкому внедрению результатов этих исследований в практику. Производители обуви должны постоянно быть проинформированы о работах ортопедов, антропологов, гигиенистов, работников протезирования, кожевенно-обувной промышленности и других организаций и учреждений, призванных решать задачу осуществления профилактических мероприятий здоровья населения и обеспечения его рациональной обувью.

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Khabibullo Sagdiev

International Islamic Academy of Uzbekistan

doctor of philosophy PhD, docent of the ICESCO chair for the study of Islamic civilization.

11, A.Kadiri, Tashkent, 100011, Uzbekistan.

Tel: (97) 771-04-08 mobil. 71-244-94-70 off

eagle75@mail.ru

TAHAWI IN THE EYES OF CONTEMPORARIES AND OTHER SCHOLARS

Abstract: The article deals with the status of the famous Hanafi scholar Abu Ja'far Tahawi. In particular, generational biography scholars provide important insights into the opinions of the ulama and prominent figures in the Islamic sciences of various eras on the status of Abu Ja'far Tahawi among the scientific class. The article highlights both laudatory and critical data regarding Abu Ja'far Tahawi. Information of a critical nature and rebuttals to them by well-known scientists are analyzed.

Key words: imam, muhaddis, ilmu-l-hadith, ulumu-l-Qur'an, Tahawi, shafi'i, hanafite, critique, praise.

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ТАХАВИ В ГЛАЗАХ СОВРЕМЕННОК И ДРУГИХ УЧЕНЫХ

Аннотация: В статье идёт речь о статусе известного ханафитского ученого Абу Джафара Тахави. В частности, ученые, рассказывающие о биографии поколений, предоставляют важную информацию о мнениях улем и известных личностей в сфере исламских наук различных эпох о статусе Абу Джафара Тахави среди научного класса. В статье освещаются данные как хвалебного характера, так и критического характера в отношении Абу Джафара Тахави. Анализируется информация критического характера и опровержения к ним со стороны известных ученых.

Ключевые слова: имам, мухаддис, ilmu-l-хадис, улуму-л-Кур'ан, Тахави, шафиит, ханафит, критика, похвала.

Введение

Известные ученые, составившие «табакаат» («биографии поколений», лиц, живших на протяжении одного и того же определенного отрезка времени) и рассказавшие биографию Абу Джафара Тахави (853–933гг.), отзывались о его личности с большим уважением. В начале каждого лестного отзыва или комментария есть фраза «в свое время он был предводителем всех ханафитов Египта».

Среди описаний, сочиненным в его честь имеются и критические отзывы. В этом контексте необходимо сначала привести описания, восхваляющие его персону, а затем перейти к

критике. Дело в том, что ни один из великих ученых не мог оставаться в стороне от критических нападков.

Тахави был одним из муджтахидов, снискавших уважение еще при жизни и приносящих пользу другим. Произведения Тахави, которые сохранились до наших дней, также свидетельствуют о его беспрецедентных знаниях. Большинство авторов вспоминают Тахави с почтением и похвалой. Столько похвалы, сколько можно сказать об отдельном ученом, все это было сказано по отношению к Тахави. Его плодотворное творчество во многих областях

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науки, его высокая нравственность и образцовое поведение, его деятельность в качестве заместителя кадия, секретаря суда, на других должностях системы правосудия привели к еще большему признанию и увеличению похвальных отзывов.

Анализ. Самая ценная из воздаваемых Тахави похвал – то, что ему были присвоены звания факих, муджтахид, мухаддис, хафиз и муснид.

В мечети Амр в Фустате существовали кружки (классы) муджтахидов и факихов различных мазхабов, где самый малочисленный кружок был ханафитский. В конце концов, в Египте были очень сильны сектантские предрассудки. Были времена, когда ханафитов изгоняли из мечетей. Переход Тахави, великого юриста и мухаддиса, родившегося и выросшего в Египте, из мазхаба шафиитов в ханафитский мазхаб, стал, с точки зрения египетских ученых, весьма важным событием. И до Тахави ханафитский мазхаб был представлен официальными правительственными учреждениями. Но первым полноценным ханафитским факихом, муджтахидом и мухаддисом Египта стал Тахави. [1:26]

Бадриддин Айни говорит: «Было иджама` (единое мнение), что Тахави является обладателем достоверности, набожности, надежности и совершенства; имел безупречные добродетели и качества в области религии и науки. Он считался специалистом в определении насих и мансух, а также в исследовании последних деяний Посланника Аллаха (да благословит его Аллах и приветствует). Он также хорошо разбирался в недостатках хадисов (*иллату-л-хадис*) и их применении (*таибик*), а также в оказании предпочтения одному хадису перед другим (*тарджих*). После его смерти в исламском мире не было никого, кто мог бы заменить его». [20:7-8]

Были также египетские судьи, которые были у него на службе и оказывали ему почтение. Примером этого является Кадий Абдурахман ибн Исхак ибн Ма'мар Джавхари. Он занимал эту должность с 313 году хиджры. Обычно он ждал, пока Тахави сядет на своего коня, и только после этого садился сам, а если Тахави не садился, этот тоже оставался пешим. Он не спешил, пока Тахави не делал этого. Когда его спросили, почему он так поступает, он ответил: «Для меня это «ваджиб» – обязательно. В конце концов, Тахави – это наш предводитель и ученый, и в то же время он на 11 лет старше меня. Даже если бы он был на 11 часов старше меня, а не 11 лет, моя должность кадия не была бы предметом гордости перед Абу Джафаром». [3:Т-1:628, 13:536]

Ибн Йунус сказал: Тахави был надежным факихом. Он был последним представителем

этого поколения, и после его смерти не родилось такого поколения». [20:8]

Среди ученых, изучавших хадисы у Тахави, были и те, кто выделял один день недели специально для него. Кадий Абу Абдулла Мухаммад ибн Абда был праведником, набожным человеком, который любил людей знания и открывал им свое сердце. У судьи было свое собственное научное собрание, свой кружок. По вечерам, кроме пятничных, он до рассвета преподавал науку студентам, вел научные дискуссии. Ибн Халликан цитирует его, что первую ночь недели он посвящает египтянину Мансуру ибн Исмаилу, вторую ночь – Тахави, а третью ночь – Мухаммаду Раби Джизийе. [11:Т-5:291, 7:Т-4:105]

Ибн Абдул-Барр Малики сказал: «Хотя он был представителем ханафитского мазхаба, Имам Тахави имел обширные знания по всем другим мазхабам». [20:8]

Абу-л-Махасин в своей книге «ан-Нужуму-з-захира» писал: «Он был великим имамом своего времени, не имел себе равных в фикх (юриспруденции), хадисоведении, «ахам» (принятии решений), «ихтилафу-л-аимма» (в разногласиях имамов), а также в лексике и грамматических науках. Его бесценные работы – доказательство гения Тахави. Он был одним из самых величайших ханафитских юристов». [20:8]

Ибн Касир сказал: «Он был факихом ханафитского мазхаба, автором ряда полезных работ, одним из самых точных рассказчиков хадисов, и у него была феноменальная (редкая) память». [8:Т-2:1708]

Бадриддин Айни говорит в другом месте: «Такие мутакаддимин (древние улемы), как Табарани, Хатиб, Хумайди и Ибн Асакир, а также мутаахирин (более поздние улемы), такие как Миззи, Захаби и Ибн Касир, признали, что он (Тахави) заслуживает доверия. Никто из мудрецов не отмечал недостатки этого человека в науке. Несомненно, что он был великим имамом своего времени. Он превзошел всех своих современников в хадисах и достиг очень высоких ступеней в фикхе – юриспруденции. Если сравнить его работы с книгами других ученых – современников, то все становится ясно. Он относится к малочисленной группе ученых, которые были сильны и в рациональных, и в повествовательных науках. В науках о риваят, хадисах, риджал (рассказчиках) и касрату-л-асанид (множественности санада) его уровень и величие не уступали уровню и величию Имама Бухари и Имама Муслима. В некоторых случаях он даже превосходил их. Большой объем риваят (его рассказов) является тому доказательством». [20:8]

Маслама ибн Касым в своей книге «ас-Сила» писал: «Он был заслуживающим доверия,

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заметным и уважаемым ученым, знатоком различных мнений, человеком, который умел различать произведения разных ученых». [3:Т-1:621]

Захид Кавсари писал: «Имам Тахави – один из великих муджтахидов. В этом не может быть никаких сомнений. Он оставил наиболее ценные труды как по повествованию (хадисам), так и по дираятату (фикху). Он один из немногих ученых, овладевших как хадисами, так и юриспруденцией, особенно усулу-л-фикх. Каждый человек, который прочитал любую из его книг, подтвердит это». [20:9]

Ибн Надим в своем труде «ал-Фихрист» писал: «Он в свое время выделялся ото всех своим умом и набожностью». [9:31]

Анвар Шах Кашмири говорит: «Имам Тахави был имамом (предводителем) ханафитов своего времени. Он также был обладателем огромных знаний о мазхабах различных имамов. Редко можно встретить человека, так глубоко вникшего во взгляды сахаба (сподвижников), табеин (последователей сподвижников) и их учеников. Он в своем труде «Шарх маани-л-асар» передал от Имама Шафи`и и Имама Ахмада ибн Ханбала через одну цепочку. Он передал хадис от Имама Малика через две цепочки и от Имама Агзама Абу Ханифы через три цепочки». [20:9]

Ибн Джаузи писал следующее: «Он был человеком высокого ума и интеллекта, знатоком фикха (юриспруденции), надежным человеком в передаче хадисов, имел красивую наружность, все говорили о его добродетелях и правдивости, он был скромным человеком, довольствующимся малым». [6:Т-13:318]

Йусуф Биннари говорил: «Не было никого, кто мог бы поспорить с его знаниями. Его память была бесподобной, он не имел себе равных в науке «риджал». Он был океаном повествования и кладезем знаний. Он усвоил мазхабы имамов со всеми доказательствами». [20:9]

Суйути в своем «Табакату-л-хуффаз» писал: «Имам имеет прекрасную репутацию и является уникальным знатоком хадисов. Он автор редчайших книг, не было ни одного факиха, равного ему». [15:339]

Мухаммад Ибрагим Балйави сказал: «Тахави - защитник (адвокат) ханафитов». [20:9]

Также можно прочитать, что многие другие ученые писали похвалы и положительные отзывы об Абу Джафаре Тахави в своих работах.

Однако, имеются и критические высказывания о Тахави. Это и не удивительно, так как ни один великий ученый в истории не избежал нападков со стороны критиков. Есть группа критиков, которая преследует в общем искренние цели и критикует справедливо. Они признают, как правильные поступки, так и ошибки ученого и выражают ему добрые намерения. В то же время

есть вторая группа, критика которой основана на зависти и враждебности. Завистников можно разделить на две группы:

Махсуду-л-акрон (зависть родственников) - то есть современники смотрят на него с завистью;

Махсуду-л-акабир (зависть великих) - то есть великие его времени враждебны ему. [20:11]

В число критиков Тахави входили представители обеих групп. Кроме того, были и факихы внутри ханафитского мазхаба, которые склонялись к критике. Во вторую группу входили в основном представители других мазхабов.

Критика Тахави со стороны представителей других мазхабов, кроме ханафитского, включает в себя следующие пункты:

Абу Бакр Байхаки пишет в своей книге «Ма`рифату-с-сунани ва-л-асар»: «Когда я начал составлять эту книгу, один из моих учеников показал мне книгу Тахави. В нем он классифицировал слабые хадисы как сахих, а достоверные хадисы как слабые». [2:54-57, 20:11, 12:26-27, 17:Т-1:66-68]

Отвечая на эту критику, Абдулкадир Кураши сказал: «Книга, о которой идет речь о Тахави, — это «Шарх маанил-асар». Он продолжил: «Согласно Байхаки, Тахави использовал якобы ложное сообщение. Об этом он написал в своей книге «Шарх маани-л-асар». Я проверил хадисы в этой книге и их «санад» (передатчиков). Я сделал это по указанию и поручению моего учителя Алауддина Мардини ибн Туркмани. Мардини дал мне книгу, содержащую имена учителей Тахави и другие источники. Я исследовал и назвал свою книгу «ал-Хави фи байан асари-т-Тахави» («Суть повествования о произведениях Тахави»). Я видел, что некоторые хадисы в работе Тахави взяты из «Кутубу-с-ситта» и других известных книг хадисов. [17:Т-1:66-68]

Очень возможно, что Байхаки, будучи мухаддисом и шафи`итским муджтахидом, мог считать ошибочным аргументы факиха и муджтахида Тахави, который сменил свой мазхаб и перешел к ханафитам. Ибн Хаджар передал от Байхаки, что он сказал: «Наука хадисов – это не его (Тахави) работа». [3:Т-1:623]

Алауддин Мардини также изучил «Сунану-л-Кубра» Байхаки и обнаружил в нем слабые хадисы. Он назвал эту работу «ал-Джавхару-н-накл фи-р-радди ала Сунани-л-Байхаки» («Суть повествований, отвергающих Сунан Байхаки»). В Индии сначала она была опубликована как отдельная книга, а затем была издана на полях книги «Сунану-л-Кубра». Наряду с этой книгой критические замечания Байхаки опровергаются в следующих трех книгах:

- произведение Абдулкадира Кураши «ал-Хави фи тахридж ахадиси-т-Тахави»;

- произведение Бадриддина Айни «Нухабу-л-афкар фи шархи маани-л-асар»;

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- произведение Бадриддина Айни «Мабанил-ахбар фи шархи маани-л-асар». [20:12]

Критика Ибн Таймийи: Ибн Таймийа в своей книге «Минхаджу-с-суннати-н-Набавийа фи накди калами-ш-ши`а ва-л-кадарийа», изучив тему хадиса «Радду-ш-шамс» («Опровержение Солнца»), писал: «Критический взгляд Тахави на хадис обычно отличается от критического взгляда людей знания. По этой причине он цитировал различные хадисы в «Шарху-л-асар» и с точки зрения сравнения увеличивал ценность того, что он считал достоверным. Большинство приведенных им хадисов «мажрух» (ненадежны) с точки зрения иснада и должны быть проигнорированы. Его знание иснада не похоже на иснад людей знания. Это так, даже если он факих и знает много хадисов». [10:Т-8:195-196]

Первоначальное повествование, которое привело к этой критике, исходило от Асмо бинти Умайс, одной из сподвижников. Согласно двум отдельным повествованиям, однажды Посланник Аллаха (мир ему и благословение Аллаха) заснул на коленях Али после молитвы Аср. Когда он открыл глаза, солнце садилось. Пророк (мир ему и благословение Аллаха) спросил Али, выполнял ли он молитву Аср. Он сказал, что не захотел беспокоить Посланника Аллаха, и поэтому не мог совершить молитву. Посланник Аллаха (мир ему и благословение Аллаха) сказал: «Мой Господь! Если Али находится на пути послушания Тебе и твоему Посланнику, поверни солнце вспять». Асмо говорит: «Как только я посмотрел – заходящее солнце вернулось назад, а затем снова зашло. Мы это видели». [17:Т-3:92]

Тахави взял два предания со слов Асмы и оба включил в свою книгу. Ибн Таймийа сказал следующее об этом хадисе: «Этот хадис не имеет подтверждения, это ложь, это выдумка» и после этого он сказал о Тахави вышеприведенные критические замечания.

Цитируя эти повествования в «Мушкилу-л-асар», ат-Тахави сказал следующее: «Известно, что солнце не задерживалось ни для кого, кроме Йуша (Джошуа) ибн Нуна. Оно снова было возвращено назад молитвами нашего Пророка. Это один из признаков пророчества. Из этого повествования можно сделать следующие выводы: а) есть ссылка на величие рангов, которых достиг Али (да будет доволен им Аллах); б) есть предупреждение тем, кто пропустил намаз Аср; в) есть примета, что спать после Аср можно». [17:Т-3:94-104]

Некоторые ученые считали, что хадисы Асмо (да будет доволен ею Аллах) относительно «Радду-ш-шамс», являются «мавзу`» (вымышленный), некоторые считали, что заиф (слабый), а некоторые считали их сахих (достоверными). Были и авторы, которые написали специальные труды на эту тему. Абу-л-Фарадж ибн Джаузи ибн

Каййум (ученик Ибн Таймийи) был среди тех, кто, подобно Ибн Таймийе, говорил: «Это ложь, это вымысел». Суйути разными путями проводил «тахридж» (выведение норм шариата из высказываний факихов, текстов имамов и правил мазхабов) и пришел к выводу, что называть его вымышленным неправильно. Мухаммад ибн Йусуф Димашки написал самостоятельную работу на эту тему, назвав тот хадис сахих. В своем труде «Маджмау-з-завайд» Нуриддина Хусайми рассказывает, что Табарани передал хадис с достоверным хадисом после того, как его передала Асмо». [19:58]

Ученый Поланпури прокомментировал: «Хотя текст этого хадиса не ясен с академической точки зрения, его нельзя полностью отрицать. Исследователи хадисов каждого столетия глубоко изучали этот хадис и, собрав все его источники, пришли к выводу, что он является «приемлемым хадисом». Абу Абдулла Нишапури изучил этот хадис и нашел его достоверным. Кази Ийаз в своей книге «аш-Шифа би та`рифи хукуки-л-Мустафа» классифицировал этот хадис как достоверный. [20:12]

Когда Карабиси написал свою «Китабу-л-мудаллисин» («Книгу лжецов»), в которой он попытался дискредитировать ряд знатоков хадисов, только Тахави отверг ее и написал «Накд китаби-л-мудаллисин» («Опровержение книги лжецов»). Понятно, что человек, плохо знающий рассказчиков, не может этого сделать. [20:13]

Критические замечания Абу Мансура Абдулкахира Тамими и Багдади: согласно этому, Тахави присвоил книгу «Шуруту-л-кабир» Ибн Джарира Табари и преподнес как свое произведение. Ибн Джарир также подверг критике то, что он написал шурут в стиле шафи`итского мазхаба.

Эти замечания, которые включены в критические книги, не соответствуют действительности. В самом деле, эта книга Тахави не имеет ничего общего с ханафизмом, не говоря уже о шафи`итском мазхабе. В то же время, по уточненным данным Рухи Узджана, Тахави, написавший «Шуруту-с-сагир» в 305 г.х., написал «Шуруту-л-кабир» задолго до этой даты. Ибн Джарир тоже был жив в то время. Известно, что Ибн Джарир - муджтахид с независимого мазхаба. [19:58-59]

Критика Ибн Хаджара. Ибн Хаджар в своем произведении «Китабу-л-мизан» цитирует Масламу ибн Касима Андалуси, который написал продолжение книге Имама Бухари «Тариху-л-кабир» под названием «ас-Сила»: «Абу Бакр Мухаммад ибн Муавийа ибн Ахмар Кураши сказал мне: «Я посетил Египте до 300 года хиджры. Тогда египтяне хулили Тахави. Причиной этому послужило очень плохое дело». [3:Т-1:621-622, 20:14, 19:59]

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Ибн Хаджар дает разъяснение по этому вопросу и пишет: замечание Масламы ибн Касыма имеет продолжение: «Тахави был в мазхабе Абу Ханифы и не мог принять ничего другого за истину». [3:Т-1:621-622]

Известно, что это определение тоже подвергалось критике. Первая критика заключается в том, что рассказчик неизвестен, в то время как вторая критика заключается в том, что независимое мнение Тахави по этому вопросу не соответствует действительности. В конце концов, Тахави никогда не работал кадием в Египте, но влиятельные судьи давали ему работу. Более того, его отношения с Абу-л-Джаишем, который, как утверждается, издал фетву, также не были хорошими. Действительно, этот Толуноглу, имя которого было упомянуто выше, арестовал Тахави за допрос о вакуфе, а позже Тахави был оправдан. [19:59]

Также не имеют основания слова Ибн Хаджара со слов Масламы ибн Касыма о Тахави: «Тахави был в мазхабе Абу Ханифы и не мог принять ничего другого как истину». Это потому, что сам Ибн Хаджар сообщает в «Лисону-л-мизан», что Ибн Залак услышал сообщение от Абу-л-Хасана Али ибн Абу Джафара Тахави (сына Тахави), противоречащее этим словам. По его словам, «Я слышал, как мой отец хвалил Абу Убайда ибн Харбавайха за его глубокие знания фикха. Они иногда спорили друг с другом по некоторым вопросам. Однажды, когда мой отец ответил на один из его вопросов, Харбавайх сказал: «Это не соответствует взглядам Абу Ханифы». Тогда мой отец сказал: «О, кадий, неужели я должен повторять все то, что говорил Абу Ханифа?» Харбавайх сказал: «Я думал, что вы слепо подражаете ему». Тогда мой отец сказал: «Только фанатичный человек слепо подражает». [3:Т-1:626]

Во-вторых, Ибн Хаджар цитирует Масламу, зная, что Хафиз Захаби в своей книге «Мизану-л-и-тидал» считает его очень слабым передатчиком и членом секты «мушаббиха» (это антропоморфизм в исламской теологии, который изображает Аллаха как человека). [5:356:358]

Маслама обвинил Имама Бухари в том, что он считает Коран сотворенным, а также в подкупе сына Али ибн Мадани и просил его взять «Китабу-л-илал» своего отца и скопировал его.

Более того, в ответ на ложь Масламы против Бухари, Ибн Хаджар в своем труде «Тахзибу-т-тахзиб» писал:

«Я счел допустимым указать, что клевета Масламы на Имама Бухари была неправильной:

1. О вере в сотворенность Корана. Это наглая ложь. Никто никогда раньше не обвинял в этом Имама Бухари.

2. По поводу второго обвинения.

а) нет необходимости опровергать это, потому что это ложь ясна как день;

б) в этом обвинении нет «санад» (передатчиков), поэтому не заслуживает внимания;

в) источники указывают, что когда произошло это событие, Бухари находился на своей родине, а не возле Мадини;

г) книгу Ибн Мадини «Китабу-л-илал» читали, изучали многие. Воровать ее не было необходимости. Есть много доказательств того, что это ложь, но пока и этого достаточно. [4:Т-3:511]

В книге Тахави «Маани-л-асар» есть специальный раздел о недопустимости кастрирования рабов. [18:Т-3:271] Эта книга – первое произведение Тахави. Следовательно, эту критику также нельзя считать близкой к истине.

Критика со стороны ханафитских факихов:

Маргинани, автор кодекса мусульманского законодательства «Хидайа», писал: «Если «мусафир» завершает свое путешествие, и большой выздоравливает, то любой из них должен восполнить пропущенные ураза (посты) за период времени, когда он достиг статуса поста. Это потому, что они достигли этого статуса. Между тем Тахави неправильно рассказывает о разногласиях между Абу Ханифой и двумя имамами в этом отношении, и это разногласие относится к вопросу «назр». [14:Т-2:120]

Тахави также упомянул разногласие в этом вопросе в своем труде «Мухтасар». Иткани в своем «Гаяту-л-байане» считает Тахави правым: «Критиковать его в этом отношении - неправильно. Он один из заслуживающих доверия имамов ханафитского мазхаба. [16:54-55, 19:59]

Критика Тахави за его иджитihad против Абу Ханифы и имамайн (двух имамов - учеников Абу Ханифы: Абу Йусуфа и Мухаммада Шайбани). Наиболее ярким примером этого является мнение Тахави о том, что в «Мухтасаре» он считает «забб» (рептилию крупнее ящерицы) съедобным. Ат-Тахави сказал: «Абу Ханифа, Абу Йусуф и Имам Мухаммад считали, что есть «забб» макрухом. Однако Абу Джафар (Тахави имеет ввиду себя) говорит: «Мы не видим причин, по которым это не следует есть». [16:441]

Хотя Абу-л-Вафа Афгани, изучивший «Мухтасар», приложил все усилия, чтобы процитировать свидетельства из других ханафитских книг и сказать, что иджитihad Тахави был неправильно понят, все же текст ясен. Действительно, в «Шарх маани-л-асар» есть раздел, связанный с этой темой. Афгани на полях своей книги пишет о том, что согласно шафи`итскому мазхабу также можно употреблять ящериц в пищу. [19:60] Эта критика также может рассматриваться как естественное следствие различия в иджитहाде.

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Заклучение.

В качестве заключения мы можем констатировать, что изучение научной деятельности Абу Джафара Тахави, высокие отзывы ученых о его наследии свидетельствует, о том, что он имел смелость сменить свой мазхаб и открыто заявить об этом своим современникам –

целой плеяде великих ученых. Он стал самым известным имамом ханафитского толка среди местных факихов Египта и в своих трудах он высказывал независимые суждения по «фуруу», а также выносил фетва и тем самым был удостоен звания имам-муджтахида.

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Article



O'ktam Bazarbayevich Palvanov

International Islamic Academy of Uzbekistan

Ph.D. Lecturer,

davr0101@mail.ru

ANALYSIS OF THE WORKS ON THE TEACHING OF MĀTURĪDIYA WRITTEN BY SCHOLARS FROM TRANSOXIANA IN THE 8th-9th/14th- 15th CENTURIES

Abstract: The scholars of Transoxiana made a great contribution to the development of the teaching of Māturīdiya. In particular, the scientific heritage of the ḥanafī-māturīdī scholars who lived in this region in the 8th-9th/14th-15th centuries is also important in this regard. Especially, seven of the local thinkers who wrote works on the science of al-kalām were identified during this period, and a total of twelve of their works were studied in detail. Three of them belong to the category of al-matn [text], four to the category of al-radd [substantiated refutation] and five to the category of al-sharḥ [commentary]. Such scholars as Shams al-Dīn Muḥammad ibn Ashrāf al-Samarqandī (d. 702/1303), Abū al-Barakāt 'Abd Allāh ibn Aḥmad al-Nasafī (620-710/1223-1311) and Ṣadr al-Sharī'a 'Ubayd Allāh ibn Mas'ūd al-Bukhārī al-Ḥanafī (d. 747/1346) were simultaneously involved in the science of al-kalām. They wrote a work in the style of al-matn and commented on it themselves. This indicates that at that time a certain author wrote a work in the style of al-matn and interpreted it himself. Indeed, this situation exists in the scientific activity of one of the most famous scholars of the ḥanafī-māturīdī school, Sa'd al-Dīn al-Taftāzānī, who lived in that period.

Some of the thinkers from Transoxiana finished their works in native region, while some of them wrote during their scientific trips to different countries as a refutation of the problems existing in those regions and the views of stray sects. In particular, Ṣadr al-Sharī'a 'Ubayd Allāh ibn Mas'ūd al-Bukhārī al-Ḥanafī (d. 747/1346) wrote Ta'dīl al-'ulūm fī al-kalām in this region. 'Alā' al-Dīn Muḥammad ibn Muḥammad al-Bukhārī (779-841/1377-1438) (779-841/1377-1438) wrote works related to the science of al-kalām such as Fāḍīḥah al-mulḥidīn wa naṣīḥah al-muwahḥidīn, Muljimah al-mujassimah during his travels.

All this points to the fact that there was a separate scientific school even in this period in this region, where the teaching of Māturīdiya was founded.

Key words: ḥanafī, māturīdī, kalām, logic, manuscript, sharḥ, commentary, ḥāshiyat, margin, ta'līq, gloss, 'aqīdah, creed, ṣaḥīfah, page, al-qaḍā', destiny, al-qadar, predestination.

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Introduction

The teaching of Māturīdiya is widespread throughout the world and over the centuries, most Muslims have followed it. Indeed, the services of scholars who lived in the middle Ages were great in the wide spread of the teaching around the world. Among others, the services of the scholars from Transoxiana (Mā Warā' al-Nahr) who lived in the 8th-9th/14th-15th centuries in this regard were of great

importance. For example, some of them were engaged in scientific activities in their homeland, while others made a great contribution to the spread of this teaching during their travels abroad. It is also worth paying special attention to the fact that thinkers from other regions came to this region and engaged in scientific activities. Because the teaching originated and formed in this region and spread to other territories.

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Although many famous ḥanafī-māturīdīya scholars were engaged in scientific activity in this period, on the one hand, not all of them wrote works dedicated to the science of *'aqīdah*, and on the other hand, their some books on the science of *'aqīdah* have not been preserved to this day. Indeed, during this period, some famous representatives of the Ḥanafī school also wrote books on the teaching of Māturīdīya. In particular, Shams al-Dīn Muḥammad ibn Ashrāf al-Ḥusaynī al-Samarqandī al-Ḥanafī al-Māturīdī (d. 702/1303) is one of the famous thinkers of this period. He is a famous scholar in jurisprudence, logic, *'aqīdah*, *ḥadīth*, and geometry. He wrote books such as *Ādāb al-Fāḍil*, *Ashkāl al-ta'sīs*, *Ādāb al-Baḥth*, *Miftāḥ al-Nazar*, *Sharḥ al-muqaddima*, *al-Ṣaḥā'if al-Ilāhīya* and *al-Ma'arif fī Sharḥ al-Ṣaḥā'if* [16:39]. Among them, *al-Ṣaḥā'if al-Ilāhīya* and its commentary *al-Ma'arif fī Sharḥ al-Ṣaḥā'if* [23] are about the science of *'aqīdah* and both have been published. In this place, *al-Ṣaḥā'if al-Ilāhīya* is described because it is also the basis of the commentary. In particular, the scholar divided the issues included in his book into nineteen sections, called them *al-Ṣaḥīfah* (page), and divided them into two main sections. In turn, *al-Ṣaḥā'if* (pages) is divided into chapters and paragraphs. Also, in his book, he quoted *the Torah* and *the 'Injīl* as proof of the truth of the prophethood of Muḥammad (p.b.u.h) and to prove the wrongness of some people's views in this regard [24:60]. In particular, the nineteen pages consist of the following topics: "Allāh's General Attributes", "*Wujūd al-Wājib*", "Allāh's Oneness", "The Mood of Allāh's Verbs", "Allāh's Knowledge", "Allāh's Will", "Allāh's life, immortality, hearing, seeing", "Allāh's talking", "Seeing Allāh", "Negative qualities", "The perfection of Allāh's power", "Deeds of humans", "Names of Allāh", "The creation of the universe", "Prophethood and its circumstances", "The Return of created things to nothingness", "*Iman, al-Islām* and disbelief", "good and evil" and "al-Imāmate".

As a general conclusion about this work, it is an important source for the teaching of Māturīdīya on the one hand, and on the other hand, it is of great importance in the comparative study of religious teachings.

One of the most prominent scholars of the Nasafī school of Islamic sciences of this period was Ḥāfiẓ al-Dīn 'Abd Allāh ibn Aḥmad ibn Maḥmūd al-Nasafī (620-710/1223-1311), known as "Abū al-Barakāt", learned jurisprudence from Shams al-aimma Abū al-Vajid Muḥammad ibn 'Abd al-Sattār ibn Muḥammad al-'Imādī al-Kardārī (d. 642/1244) [3:295]. The scholar is the author of valuable works on *uṣūl al-fiqh*, *furū' al-fiqh*, *tafsīr*, and *'aqa'id*. In particular, the sources mention two of his books on the science of *'aqīdah*, the first of which is a work called *al-'Umdah fī uṣūl al-dīn* and was written based on the teaching of Māturīdīya. This book is *'Umdah al-'Aqā'id*, *'Umdah*

'aqīdah Ahl as-sunna wal-Jama'a and *al-'Umdah fī uṣūl al-dīn* is also called by such names [3:295]. At this point, it should be noted that this book is written in the style of a text, and given that the topics in it and their description are almost identical to Abū Ḥafṣ al-Nasafī's treatise *'Aqā'id al-Nasafī*, it was created based on this treatise and the description in it can be said that the views have been further developed. *'Umdah al-'Aqā'id* was originally published in London in 1843 by William Overton under the title *'Umdah 'aqīdah Ahl as-Sunna wal-Jamaa* [Pillar of the Creed of the Sunnites] together done with *'Aqā'id al-Nasafī* by Abū Ḥafṣ al-Nasafī [10]. It was also reprinted in 2016 [11]. The second is a commentary by Abū al-Barakāt al-Nasafī on his *al-'Umdah* called *al-'I'timād fī-l-i'tiqād* [13:98], which was completed in 698/1299. Also, the work was called such *al-'I'timād fī-l-i'tiqād*, *Sharḥ al-'Umda*, and *al-'I'timād sharḥ al-'Umdah* [18:173]. It has been published several times [12]. Abū al-Barakāt al-Nasafī also made a great contribution to the spread of the teaching of Māturīdīya, and sources indicate that he also visited the city of Baghdād [18:173]. The scholar died in 710/1311 and was buried in a place called *Izaj*. There are two sources of information about the place called *Izaj*, one of which is the name of a village in Samarkand and the other is the name of a city located between Khūzestān and Iṣfahān [9:155].

Hisām al-Dīn Ḥusayn ibn 'Alī ibn al-Ḥajjāj ibn 'Alī al-Bukhārī al-Sighnāqī al-Ḥanafī (died 714/1314-1315) was considered one of the prominent representatives of the Bukhara Ḥanafī school of jurisprudence and was originally from the city of Sighnaq. He learned jurisprudence from Ḥāfiẓ al-Dīn Abū al-Barakāt 'Abd Allāh ibn Aḥmad ibn Maḥmūd al-Nasafī and Fakhr al-Dīn Muḥammad ibn Muḥammad ibn Ilyās al-Maymūghī. Hisām al-Dīn al-Ḥusayn al-Sighnaqī traveled to many countries and served to spread the teaching of Māturīdīya. In particular, he met Qādī al-Quḍāt Naṣīr al-Dīn Muḥammad ibn Qādī Kamāl ad-Dīn Abū Ḥafṣ ibn 'Umar al-'Adīm ibn Abū Jaradat in the city of Aleppo and permitted him to narrate all his works. Later, he taught for a while in Baghdād. Then he went to Damascus in 710/1311 [2:119]. The scholar is the author of many works, he is considered one of the narrators of Abū al-Mu'īn Maymūn ibn Muḥammad ibn al-Makḥul al-Nasafī's (438-508/1038-1114) work *al-Tamhīd fī qawa'id at-tawḥīd* and also wrote a detailed review on it named as *al-Tasdīd fī sharḥ al-Tamhīd* [17:247; 3:155]. For example, the creedal issues included in the work *al-Tamhīd fī qawa'id at-tawḥīd* were grouped into twenty-five chapters, and this order was preserved in the commentary process.

Hisām al-Dīn Ḥusayn al-Bukhārī, in this review, not only substantiated the issues with the Holy Qur'ān, *ḥadīth*, and logical arguments but also with the works of al-Imām Abū Ḥanīfah's *Kitāb al-'ālim wa al-muta'allim*, Abū al-Mu'īn al-Nasafī's *Tabṣīrāt al-*

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adillah, Abū Maṣūʾir al-Māturīdī's *Kitāb al-Tawhīd*, *al-Maqālāt*, Abū al-Yusr 'Alī al-Bazdawī's *al-Kifāya*, *Sharḥ al-Jame' al-saghir*, *Uṣūl al-fiqh*, Burhān al-Dīn Maḥmūd al-Marghīnānī's *Tatimmat al-fatawā*, Abū Ḥafṣ 'Umar al-Nasafī's *al-Taysīr fī 'ilm al-tafsīr*, Maḥmūd al-Zamakhsharī's *al-Kashshāf* and other. This review has also been published.

Shujā' ad-Dīn Hibat Allāh ibn Aḥmad ibn Mu'allā ibn Maḥmūd al-Tarazī al-Turkistanī al-Ḥanafī al-Māturīdī is one of the famous scholars of the Ḥanafī school. He was born in 671/1273 in the city of Taraz [14:71]. The scholar traveled to different countries to study. For example, he went to Damascus, where he studied jurisprudence from Jalāl al-Dīn Abū Muḥammad 'Umar ibn Muḥammad. He is the author of many works related to various fields of Islamic sciences, such as *Sharḥ al-Jāmi' al-kabīr*, *Tabṣīrāt al-asrār fī sharḥ al-Manār*, *al-Ghurār*, *al-Misāl*, *Al-Irshād*. In particular, it is noted in the sources that he wrote a commentary on *Bayan al-Sunnah wa al-jama'ah* known among scholars as *'Aqīdah al-Ṭahāwī* [4:466-467], it is also published [25]. The work *'Aqīdah al-Ṭahāwī* was written by one of the famous scholars of the Ḥanafī school, al-Imām Abū Ja'far Aḥmad ibn Muḥammad ibn Salāma al-Ṭahāwī al-Ḥanafī al-Misrī (239-321/853-933), it was written in the style of a text and contains 134 creedal issues, but they are not divided into specific chapters [8]. The scholar stated that the reason for commenting on this work was a request made by his friends. This commentary is distinguished from others by conciseness, brevity, completeness, comprehensibility and strictness of the sentences, the interpretation of a specific issue based on verses of the Qur'ān and *ḥadīths*, and by the fact that the narrations are quoted only from famous Ḥanafī scholars such as al-Imām Abū Ḥanīfah, al-Imām Abū Yūsuf, al-Imām Muḥammad, al-Imām Abū Maṣūʾir al-Māturīdī, Sirāj ud-Dīn Abū Ḥafṣ 'Umar ibn Ishāq ibn Aḥmad al-Hindī al-Ghaznawī (704-773/1304-1371), Saif al-Ḥaqq Abū al-Mu'īn Maymūn ibn Muḥammad ibn Muḥammad al-Ḥanafī al-Nasafī (418-508/1027-1114), al-Qādī Abū al-'Alā Sa'īd ibn Muḥammad ibn Aḥmad (d. 432/1040 y.). For example, during the commentary, most of the quotes from the creedal views of Sirāj al-Dīn Abū Ḥafṣ 'Umar al-Ghaznawī are given.

The scholar died on the night of the tenth day of the month of Ḍū al-Qa'dah 733 Hijri (July 23, 1333 AD) in the *al-Zahiriya* madrasah [4:466].

Ṣadr al-Sharī'a 'Ubayd Allāh ibn Mas'ūd ibn 'Umar ibn Ṣadr al-Sharī'a 'Ubayd Allāh ibn Maḥmūd ibn Muḥammad al-Maḥbūbī al-Bukhārī al-Ḥanafī (d. 747/1346) is also one of the famous scholars of the Bukhārā jurisprudence school, and he is considered as a thinker in the fields of *fiqh*, *furū' al-fiqh*, *ḥadīth*, *nahw*, *'aqīdah*, and logic [18:185]. For example, Allama Sa'd al-Dīn al-Taftāzānī said about him, "he is a researcher and editor of guidance science, a

scholar of *'ilm al-dirāya* [discernment, meaning], a leader of the criterion of intellectual and verbal sciences, a corrector of *uṣūl al-fiqh*, *furū' al-fiqh*, a leader of *al-Sharī'a* and *al-Islām*. May Allāh raise the level of that person in heaven" [19:5].

The scholar is the author of *al-Tanqīh fī uṣūl al-fiqh*, *al-Tawzīh fī hall ghawāmiz al-Tanqīh*, *al-Wiqāya*, *Sharḥ al-Wiqāya* and its summary *al-Nuqāya* [9:429-430], *Ta'dīl al-'ulūm fī al-kalām*, *al-Wishāh fī al-ma'nā wa al-bayān* [15:197-198] and of other similar works. In the sources of *tabaqat* and *tarajim* about the activities of Ḥanafī scholars, it is stated that 'Ubayd Allāh ibn Mas'ūd only has a work called *Ta'dīl al-'ulūm fī al-kalām* on the science of the *kalām*. For example, in manuscript number 043 in the library of the University of Leipzig, the title of this book is given as *Ta'dīl al-'ulūm al-ilāhiya* [22:1^a]. By the way, during this research, it was discovered that 'Ubayd Allāh ibn Mas'ūd wrote a special commentary on this work, and it was found that a rare ancient copy of this book, copied by his students in 758/1357, is saved in the Lundeberg fund of the Berlin State Library under №394 [20]. From this source, it is clear that 'Ubayd Allāh ibn Mas'ūd completed two works on the science of the *kalām*. It is also emphasized in his copy of the manuscript saved in the fund of the Umm al-Qura University library under the number №445 [21]. In addition, the scientist indicated that he intended to write a commentary on it in the work *Ta'dīl al-'ulūm* [22:72^a].

Ta'dīl al-'ulūm is structurally composed of three parts: the first is devoted to the science of logic, the second to the science of *'aqīdah*, and the third to various fields of science [20:42^a]. From the point of view of the topic, the *'aqīdah* part of the work will be touched upon here. In particular, the second part begins with a complete citation of the surah *al-Fātiḥa*, and then directly begins the description of the topics. For example, seven topics are counted according to the number of verses of the surah *al-Fātiḥa*. The scientist commented on the quality of the *kalām* of God in his commentary *Ta'dīl al-'ulūm* and emphasized that it is considered appropriate to quote it in the science of the *kalām* because of the preface of the *kalām* of God (Holy Qur'ān). He also said that all disputes in the science of the *kalām* are similar to the order of the surah *al-Fātiḥa* [21:1^a-1^b].

In particular, the first topic in the second part of the book on the science of *'aqīdah* is the concept of existence, its essence and issues, and mainly logical method was used in their description. The second topic is *wājib al-Wujūd*, in which the physical and action attributes of Allāh, the seeing of Allāh in Paradise, *al-qaḍā'* [destiny] and *al-qadar* [predestination], and the actions of Allāh are described. The third topic is about the existing things in the universe, in which the properties of the bodies in existence, the Earth, the stars and the universe, the properties of matter, the soul and its essence, and *al-*

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Tanāsukh [metempsychosis] are discussed. The fourth topic is about the world's famous occurrences (accidents), in which the issues of action and inaction are described. The fifth topic is about the existence of *al-Mālik* on the last day, which the last day, the return of created things to nothingness, happiness, and mystery, the questionings of *al-Munkar* and *al-Nakir* [The Denied and The Denier], the life of the grave, *al-Širāt* [the bridge] and *al-Mīzān* [the scale] are described. The title of the sixth topic is the verse of the surah *al-Fātiha*, "To You alone do we pray and to You alone do we seek help", which deals with the definition of faith, its decrease or increase, and exception. The name of the seventh topic is the verse "Let it be the way (the path of guidance) of those whom You have bestowed", which describes the prophethood of Muḥammad (p.b.u.h), the innocence of the Prophets and their superiority over the angels, the caliphate, the Al-Imāmate, and *al-karāmah*. In this commentary, 'Ubayd Allāh ibn Mas'ūd cited many works of Nasr uddin Abū Ja'far Muḥammad ibn Muḥammad ibn al-Hasan al-Tusi al-Samarkandī, such as *Tajrīd al-'aqa'id*, *Sharḥ al-Ishārāt*, *al-Šaḥā'if*, *al-Šhiḥā*. So, this work is one of the important sources of the teaching of Māturīdīya.

'Alā' al-Dīn Muḥammad ibn Muḥammad ibn Muḥammad al-Bukhārī al-Ḥanafī (779-841/1377-1438) is one of the great scholars of the Ḥanafī school and was a disciple of Sa'd al-Dīn al-Taftāzānī. 'Alā' al-Dīn Bukhārī, at the same time, in addition to being one of the great representatives of the *Naqshbandī mazhab*, was a mature scholar of fiqh, 'aqīdah, and other such sciences.

'Alā' al-Dīn Muḥammad has works on the science of 'aqīdah, such as *Risālah fī al-i'tiqād*, *Fādīḥah al-mulḥidīn wa naṣīḥah al-muwahḥidīn*, and *Muljimah al-mujassimat*, and they are considered important sources for the teaching of Māturīdīya. In particular, he covered sixty-three creedal issues in his work *Risālah fī al-i'tiqād*, starting with "the first obligatory act for a dutiful servant" and refuting the views of the *Rāfiẓī* about the return of 'Alī (r.a.) and his descendants to earth. completed.

'Alā' al-Dīn Muḥammad al-Bukhārī himself, in the preface of his work "Muljima al-mujassima", narrated that he went to Baghdād in 832/1428-1429, and there the wrong views of Ibn Taymiyyah spread, and he and those who followed him lost the right path. Because of this, the scholar claims that this book was written as a refutation of the views of Abū al-'Abbās Aḥmad ibn 'Abd al-Ḥalīm (661-728/1263-1328), known as Ibn Taymiyyah [6]. In particular, four of Ibn Taymiyyah's views are refuted in it, two of them are theological-mental and the rest are related to jurisprudence. In particular, the first of the theological-mental issues is the purity of *Wājib al-Wujūd* [The Necessary Existent] from physical characteristics and the second is the non-permanence of *al-Jahannam* [the hell]. The first of the

jurisprudential issues is traveling to visit the graves of the prophets and holy saints who are servants of God, and the next is *al-Ṭalāq* [divorce]. The scholar refuted Ibn Taymiyyah in these four issues, quoting evidence from the Holy Qur'ān, *ḥadīths*, and the narrations of the Companions [7:35-37].

'Alā' al-Dīn Muḥammad al-Bukhārī's work entitled *Fādīḥah al-mulḥidīn wa naṣīḥah al-muwahḥidīn* is one of the important sources on the teaching of Māturīdīya. It was written as a rebuttal to the treatise *Fuṣūṣ al-ḥikam* by Muḥyī al-Dīn Abū 'Abd Allāh Muḥammad ibn 'Alī al-Ḥātīmī al-Ṭā'ī (560-637/1165-1240), known as Ibn al-'Arabī. The scholar stated that he wrote this book at the request of his friends to refute *Fuṣūṣ al-ḥikam* based on false intellectual conclusions instead of solid evidence. Also, the scholar called the supporters of this idea *al-Zindīq*. In addition, 'Alā' al-Dīn Muḥammad al-Bukhārī emphasized that he does not use the Holy Qur'ān and *ḥadīths*, the narrations of jurisprudence books, and the fatwas of the Ḥanafīs, who are scholars of the nation, and that these sources do not give them any benefit, and he said that he argues only with solid intellectual evidence. As a reason for this, the supporters of *Fuṣūṣ al-ḥikam* interpret the verses of the Holy Qur'ān with their views, citing the fact that they do not understand the truth of monotheism and the secret of *al-Sharī'a* [5:48-49].

Therefore, he cited the views of scholars of Ahl as-sunna wal-l-Jamaa such as Abū Yazīd al-Bisṭāmī (d. 261/874-5), Abū Ḥafṣ al-Ḥaddād al-Naysābūrī (d. 260/874), Sahl ibn 'Abd Allāh ibn Yūnus al-Tustarī (d. 283/896), Zayn al-'Ābidīn 'Alī ibn al-Ḥusayn (658-713/1260-1313), 'Abd al-Raḥmān ibn Aḥmad ibn 'Abd al-Ḥaffār al-Ījī (d. 756/1355), as evidence without clearly citing the sources. He also cited works such as al-Imām al-al-Ghazālī's *Iḥyā' ulūm al-dīn*, Sa'd al-Dīn al-Taftāzānī's *Sharḥ al-Maqāsid*, Abū al-Qāsim al-Qushayrī's *Naḥw al-qulūb al-kabīr*, al-Imām al-Zamakhsharī's *al-Kashshāf*, and al-Imām al-Rāzī's *al-Taḥfīr al-kabīr* as evidence.

Khwaja Muḥammad Parsā al-Bukhārī (749-823/1348-1420) was also one of the famous scholars of the Ḥanafī school and a sheikh of the *Naqshbandīyyah mazhab*, whose full name is Abū al-Faṭḥ Muḥammad ibn Muḥammad ibn Maḥmūd al-Ḥāfiẓ al-Bukhārī. He deeply studied various sciences of *al-Sharī'a* such as the Qur'ān, *Ḥadīth*, and *al-Kalām* from the well-known scholars of his time. As a result, he became one of the most recognized scientists. It is recorded in the sources that he wrote works on various fields of science, and most of them were written in Persian. In particular, a manuscript copy of the scholar's work *I'tiqādāt* on the science of 'aqīdah is kept in the manuscript fund of the Institute of Oriental Studies named after Abū al-Rayḥān al-Bīrūnī in Uzbekistan. *I'tiqādāt* was written in Persian and is considered one of the important sources of the teaching of Māturīdīya.

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Even though there were many books in this field of science even before the time when the scientist lived, he wrote this treatise. The scholar stated that the reason for writing this treatise was to refute some heretics in Samarkand, Bukhara, and Mā Warā' al-Nahr. The scholar prayed to Allah to protect the residents of this city and region and all these Muslims would be steadfast in the Sunnah and Ismat of the Messenger of Allah. The scientist prayed to God to protect all these Muslims from the heresies and evils of the misguided.

In this book, creedal issues such as the questionings of *al-Munkar* and *al-Nakir* in the grave, Caliphate, *al-Mi'raj* and who initially confirmed it and who denied it, the miracles of the Prophets, the intercession of the Messenger (p.b.u.h.) of Allāh, stories about *al-Ṣaff*, Maryam, *al-Ankabūt* and *Aṣḥāb al-Kahf* in the Qur'ān and fiqh issues such as *al-Tarāwīḥ* prayer are given [1].

Khwaja Muḥammad Parsā fell ill after performing Hajj and died in Medina in 823/1420 at the age of 72. The scholar's funeral was read by Mawlānā Shams al-Dīn al-Fanārī and he was buried next to the grave of 'Abd Allāh ibn 'Abbās (r.a.).

In conclusion, it should be said that in this study, seven works related to the Ḥanafī- Māturīdī of Mā Warā' Al-Nahr scholars who lived in the XIV-XV centuries were identified, and a total of twelve of their works were covered in detail. Three of the twelve works belong to the category of "matn" (text), four to the category of "radd" (refutation), and five to the category of "sharh" (commentary).

Scholars like Shams al-Dīn Muḥammad ibn Ashrāf al-Ḥusaynī al-Samarqandī, Ḥāfiẓ al-Dīn 'Abd Allāh ibn Aḥmad ibn Maḥmūd al-Nasafī, Ṣadr al-Sharī'a 'Ubayd Allāh ibn Mas'ūd al-Bukhārī once wrote a work in the style of a "matn" (text), on the science of *'aqidah* and commented on it themselves. This indicates that writing a work in the style of "matn" (text) by a scholar and commenting on it himself was a tradition at that time.

All this indicates that there was a separate *kalām* school even in that period in the region where the teaching of Māturīdīya arose. Some of these works were written in this region, and another of them was written as a special refutation of the conflicting issues and views of the strays encountered by the local Ḥanafī-māturīdī scholars during their scientific trips to different countries. An example of this is the work of 'Alā' al-Dīn Muḥammad ibn Muḥammad al-Bukhārī.

Furthermore, the teaching of Māturīdīya has spread widely to different regions of the world. During the Timurid era, the fact that Amir Temur himself followed the Ḥanafī school was a huge historical factor in the rise of the Ḥanafī school to the status of a state. In addition, in this process, the emergence of many scholars of the Ḥanafī school from *al-Khorāsān* (Traxiane) and *Mā Warā' Al-Nahr*, as well as their scientific careers and activities in government positions, were of great importance. Also, the scientific trips of local scholars influenced the spread of this teaching.

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Article



Nargiza Rayimovna Abdukayumova

Termiz State University

Deputy Head of the Educational and Methodological Department,

Uzbekistan

ANALYSIS OF THE CURRENT STATE OF CULTURAL- INTELLECTUAL DEVELOPMENT OF STUDENTS

Abstract: Intellectual development refers to the increase in the ability of people to understand and reason. In young adolescents, intellectual development is not as visible as physical development. During adolescence, young people exhibit a wide range of intellectual development, including the development of metacognition and independent thinking. During this period, young people develop the ability to think, but the transition to higher levels of cognitive functions varies significantly at each age.

Key words: intellectual development, cognitive functions, youth, lesson, thinking, ability to reason.

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Introduction

Young people typically move from clear logical processes to developing and testing hypotheses, analyzing data to clarify content with complex concepts, and acquiring critical thinking skills. As they mature, they begin to analyze situations, derive meaning from conventional wisdom, and experience metacognition. They begin to think more and more on ideological topics, discuss positions and challenge the recommendations of adults. They form impressions in themselves through introspection and "have the ability to perceive". In addition, they appreciate higher levels of humor. To make sense of the world around them, young adolescents rely on their personal experiences and prior knowledge as learners. Experience plays a central role in brain development and encourages students to create meaning based on what they already believe and understand. During adolescence, young people are more interested in life experiences and real learning opportunities; they are less interested in traditional academic subjects. Intellectually young adolescents look for opportunities to explore different aspects of their environment. They are also curious about adults and often closely observe the behavior of adults. In addition, they have developed the ability to think about the future, anticipate their own needs, and

develop personal goals. Implications for practice. Teachers should take into account differences in the intellectual development of young adolescents when planning learning experiences. To address this diversity, educators must provide a range of instructional approaches and materials that are appropriate for a wide range of students' cognitive abilities. For example, concrete thinkers require more structured learning experiences, while abstract thinkers need more challenging activities. In addition, young adolescents need teachers who understand and know their thoughts. Teachers should plan curricula around life concepts and provide authentic learning activities (eg, experimentation, data analysis, and synthesis) that are meaningful to young learners. As young adults' interests develop, they demand opportunities for exploration throughout their educational programs. To develop intellectual development, these young people need to interact directly with their world - through conversations with peers and adults, and through hands-on experience. Likewise, young adults need to learn and embrace democratic principles. Teachers can also hold forums to explore the reasons behind school, home, and community rules. As role models for adults, teachers

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can guide young adolescents to connect intellectual reasoning and moral reasoning.

Results and Discussions

Identification and formation of creative abilities. The main development of creative abilities in everyday life is carried out through play. In the game, children will probably like games that are able to determine the most interesting range of activities for children. Therefore, the game is one of the main ways to identify creative abilities. Psychologists have developed special tests in the form of a game that allow you to determine how well your imagination is developing and how the child thinks. Some children act on the power of imagination, while others tend to capture images from memory. Sometimes children refuse to participate in such games, which indicates the need for a special approach to the child. Creating the necessary conditions for the development of children's creative abilities also plays a big role. Parents should not only give the child the opportunity to develop, but also actively participate. In no case can you put pressure on the child, allow him to play the game or participate in practical arts. In particular, this error is allowed with the development of musical abilities. Since the child's interest in music is not enough, parents are in a hurry to send him to a music school. In order to develop any creative abilities in children, it is necessary not only to identify the baby's inclinations, but also to carry out serious work that strengthens the desire to develop in the right direction. You can use almost all surrounding objects and situations as a means of developing creative abilities. Creativity means to create, to create. Therefore, the main goal of the child's lessons is to teach him how to describe and understand what he discovered in the end. Sometimes, we unknowingly develop children's creative abilities through play and communication. However, consistency and method are necessary for successful development. For example, do not bring a child to a wedding while playing developmental games. If you feel that interest is starting to wear you down, leave the game. But long-term breaks are not done either. The best way to create a program for developing children's creative abilities. The program should include all methods of development - visual, verbal and practical. Visual methods include seeing any pictures, drawings, or real vision. For example, when studying clouds, determine what they look like. Oral methods include various forms of communication, stories, conversations. For example, the combined composition of fairy tales, in turn, contemplates a judgment on a plot. Practical methods include games, creating and using different models, and doing developmental exercises. By combining all the methods, you can achieve comprehensive development of the child, which will positively affect your intellectual abilities.

Results and Discussions

The development of artistic abilities can begin up to 1 year. At this age, children learn about objects and their properties. It is recommended to come across a variety of things for paper, bright pencils and markers in the child's view. By the age of 2-3, the introductory period begins, children make arbitrary lines and shapes and are very interested in colors. First, parents should monitor the child's safety. When children turn 3, parents participate. First, it is recommended to declare lines, for example, a circle is like an apple, a line to a path. It comes down to drawings with children's drawings, there is a transition from arbitrary tweets on paper to the desire to produce a meaningful picture. During this period, it is important to encourage and support the baby, to give him freedom in his work. It is recommended when a child develops enough interest in drawing to be sent to an art school. Development of musical creative abilities of children. Development of musical abilities can begin from the first days of a child's life. Children are very sensitive to sounds, voices and intonations, they easily know the mood and state of their parents, and prolonged exposure to music or TV sounds is disturbing and disturbing. After all, children are introduced to music. Listening to the work of older children, learning songs together, conducting artistic exercises with musical instruments. Harmonious development of a child's musical ability is possible only with the active participation and interest of parents. The basis for the development of children's creative abilities is, first of all, freedom. Parents should not force and force the child. Success in this regard requires patience and certain tactics - the parent must listen to the child's opinion, encourage and encourage his interest in any creative activity. Creativity is a combination of many qualities. And the question about the components of human creativity remains open, although there are currently several hypotheses about this problem. Many psychologists associate the ability of creative activity, first of all, with the specific features of thinking. In particular, Guilford, a well-known American psychologist who dealt with the problems of human intelligence, found that creative individuals are characterized by the so-called divergent thinking. People with this type of thinking do not focus all their efforts in solving the problem on finding the only right decision, and start looking for a solution in all possible directions to consider as many options as possible. Such people tend to create new combinations of elements that most people know and use only in a certain way, or to make connections between two elements that at first glance have nothing in common.

Creative thinking is based on a different way of thinking, which is characterized by the following main features:

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1. Speed - the ability to express the maximum number of ideas (in this case, their quantity is important, not their quality).

2. Flexibility is the ability to express different ideas.

3. Originality - the ability to create new non-standard ideas (this can be manifested in answers, solutions that do not correspond to generally accepted ones)

4. Completeness - the ability to improve your "product" or give it a finished look.

The well-known local researcher of the problem of creativity A.N. Luk, based on the biographies of famous scientists, inventors, artists and musicians, identifies the following creative abilities:

1. The ability to see the problem where others do not.

2. The ability to break down mental operations, replace several concepts with one, and use symbols that have more and more capacity in terms of information.

3. The ability to use the skills acquired in solving one problem in solving another problem.

4. The ability to perceive reality as a whole, without dividing it into parts.

5. Ability to easily connect long concepts.

6. Memory's ability to provide the right information at the right time.

7. Flexibility of thinking.

8. The ability to choose one of the alternatives to solve the problem before investigating it.

9. The ability to incorporate newly received information into the existing knowledge system.

10. To be able to see things as they are, to be able to distinguish what is observed from what is presented through interpretation.

11. Ease of generating ideas.

12. Creative imagination.

13. The ability to improve details, improve the original idea.

Candidates of psychology V.T. Kudryavtsev and V. Sinelnikov (20) on the basis of a wide historical and cultural material (history of philosophy, social sciences, art, specific fields of practice) identified the following universal creative abilities formed throughout human history:

1) realism of imagination - a figurative understanding of some important, general trend or pattern of development of an integral object before a person has a clear idea about it and includes it in a system of strict logical categories;

2) the ability to see the whole before the parts;

3) the suprasituational-transformative nature of creative solutions, the ability to independently create an alternative rather than just a choice in solving a problem;

4) experiment - the ability to consciously and purposefully create conditions that most clearly reveal the hidden essence of objects in ordinary situations, as

well as the ability to observe and analyze the "behavioral" features of objects in these conditions.

In our opinion, the methods of these scientists are more suitable for older children. school age. Therefore, consider what abilities other scientists have identified. Stolyarenko identified the following abilities that characterize creativity: plasticity (the ability to produce many solutions), mobility (quickly moving from one aspect of the problem to another, not limited to one point of view), uniqueness (unexpected, non-trivial, non-trivial solutions). The famous American psychologist D. Guilford (2) identified 16 such intellectual abilities. Among them: fluency of thought (the number of ideas that appear per unit of time), flexibility of thought (the ability to move from one thought to another), originality (the ability to create new non-standard ideas), curiosity (sensitivity to problems in the world), the ability to develop a hypothesis, fantastic (complete isolation of the answer from reality when there is a logical connection between the stimulus and the reaction), completeness. The problem was further developed in the works of P. Torrens. According to his approach, the abilities that determine creativity include: ease, which is evaluated as the speed of completing a task, flexibility, which is evaluated as the number of transitions from one class of objects to another, and originality, which is evaluated as the speed of completing a task. The minimum frequency of the response given in a homogeneous group. In this approach, the criterion of creativity is not the quality of the result, but the characteristics and processes that activate creative productivity: fluency, flexibility, originality and thoroughness in the development of tasks. According to Torrens, the maximum level of creative achievement is possible with a combination of a triad of factors: creative abilities, creative abilities and creative motivation.

In psychology, it is customary to associate the ability of creative activity, first of all, with the specific features of thinking. Creative thinking is characterized by associativeness, dialectic and systematicity. Associativity is the ability to see connections and similarities in things and events that cannot be compared at first glance. Forming contradictions and finding ways to resolve them allows for dialectical thinking. Another quality that shapes creative thinking is consistency, i.e. the ability to see an object or phenomenon as a whole system, to perceive any object, any problem comprehensively, in various connections; the ability to see the unity of interconnections in the laws of events and development. The development of these qualities makes thinking flexible, original and effective.

Conclusion

In order to foster successful experiences for each young adolescent, schools must provide organizational structures such as team building and

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counseling programs. These structures help ensure that each young adolescent is well-known by at least one adult and has a regular presence to build positive peer relationships. Young adolescents need opportunities to build relationships with adults who understand them and are willing to support their

development. Educational programs and practices can be used to promote friendliness, concern, and group cohesion. Young adolescents deserve a school environment that is free from harsh criticism, humiliation, and ridicule.

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Article



Aziza Akmalovna Ziyadullayeva

UzSWLU

Faculty of Philology, teacher

lia814982@gmail.com

THE IMPORTANCE AND IMPLEMENTATION OF TERMS REPRESENTING CONCEPTS RELATED TO THE WORD «SYMBOL»

Abstract: Since every miraculous element in folk tales requires an explanation, it is necessary to carry out scientific research about the symbols used in them and the associations related to them. The aim of this article is to compare the symbolism of colors in English and Uzbek folk tales, to identify the common and different aspects between them.

Key words: aesthetic phenomena, symbolisms, primitive people, literature, folklore, images, colors, evil, good.

Language: English

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Introduction

Special attention is made in global folklore studies to identifying the elements distinctive to the artistic interpretation of symbols, particularly colors, and the components that serve as the foundation for their transformation into an aesthetic phenomena. It is essential to generalize the world's perspectives on color symbolism, to define the location and significance of color symbolism in folklore, in the education of the next generation, and to define the artistic essence, features, and functions of colors in fairy tales. The reforms implemented in our country in the last few years, including the Strategy of Actions for the Further Development of the Republic of Uzbekistan, provided further possibilities for expanding the scope of scientific research in the fields of science, literature, culture, and art, the development of our national culture, and the analysis of the historical-mythological foundations of folklore works, that have played an important role in the development and evaluation of the semantics, symbolism, and roles of colors in creative text in a comparative aspect with English folk tales, revealed the need of distinguishing their common and unique aspects.

The components that are the foundation for the development of existing colors from non-aesthetic to aesthetic phenomena and their historical-mythological

bases were discovered by examining the study of the artistic comprehension of images and symbols related to colors through the evolution of fairy tales created in the thinking of two English and Uzbek peoples. The investigation of the physical, psychological, philosophical, and artistic-aesthetic characteristics of color for scientific objectives began much earlier in the history of humanity, and significant progress has been made in this field. The attributes of symbolism in folklore, as well as color symbols as an aesthetic and symbolic tool, are covered in details.

Nonetheless, one of the most essential projects is to investigate the creative and aesthetic tasks of colors in a multidimensional approach using English and Uzbek folk tales as examples.

Methods.

Descriptive dictionary collections published in the Uzbek language, primarily in literary sources, provide general meanings. For instance, N. Hotamov and B. Sarimsakov define a symbol as follows: "symbol - the result of figurative thinking." A symbol is formed as a result of similes and metaphors that achieve exceptional stability and universal understanding. A symbol appears as a result of visualizing similar things or objects through their leading features or essential functions; thus, the

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conditional connection between things or events transforms into stable conceptions. The sun, for example, is an omen of light.¹

Light represents freedom, happiness represents life, and the list goes on. The following definition of the symbol can be found in D. Kuronov's Literary Dictionary: "In fiction, a symbol is also used as a kind of movement, which is essentially close to an allegory." A symbol differs from an allegory in that it functions both literally and symbolically within a certain context.² Cholpon's poetry, for example, has images such as "star," "cloud," "spring," and "winter." A. Kvyatkovsky's³, S.S. Averinsev's,⁴ L. Timofeev's, and N. Vengrov's⁵ dictionaries in Russian literary studies have distinct approaches to the term symbol. However, while expressing the primary signs and attributes of the symbol, opinions match and diverge in certain spots.

According to the Russian folklorist V.I. Yeremina, a symbol is defined as "an idea that shows a constant circle of relations in a specific poetic system and is significantly different in terms of imagination." And, as N.P. Kolpakova⁶ points out, attempting to tie one or more symbolic meanings to independent concepts is pointless; different trees and flowers exist as artistic imagery in songs and may express a sad or pleasant tone with respect to the content of each song. "These concepts support one another and can be distinguished by folklore materials.

Among the studies that approach the subject of symbols in Uzbek folklore from the perspective of theory are the works of Sh.Turdimov⁷, J.Eshonkulov, and D.Rajabov. J. Eshonkulov in his work "Folklore: Image and Interpretation" offered his views on the foundations of symbolic and figurative thinking in folklore, as well as interpretations of its visual appearance. First and foremost, the scientist observes that the language of myths is the language of symbols, that the world can be seen, valued, and reacted to in primitive human perceptions through symbols associated with myths and fairy tales.

Research.

When a primitive man witnessed a flood, a storm, a fire, or a flood, he panicked because he felt helpless in front of them. When the sun warmed his body, he was delighted. As a consequence, shade, fear, and sunlight were transformed into symbols. This astonishment and pleasure represented man's inner

world associated with to the outer world. Furthermore, a person who regards darkness as a demon and light as an angel, has given these two symbols the meanings of goodness and evil. Because the primitive human being had no abstract concepts. As V. M. Melitinsky described it, as they grasped the environment and reacted to it through their imagination. Symbol and imagination became twins. For this, reason, there is an idea that all symbols are founded on human imagination and experience.

Sh.Turdimov, a folklorist, discusses the concept of symbol and the basis of poetic symbols, as well as the general and specific characteristics of symbolic imagery in folklore and literature, and the attributes of poetic symbols in a given folklore genre. "Usually, the term symbol is widely used not only in literature and art, but also in all aspects of life and science," says the expert. The common trait that links the concept of "symbol" in all of these domains is that the interpreted thing (whatever it is) that appears as a symbol combines numerous concepts and generates a solid association. While writing, the author observes that symbols are uniquely expressed in life, science, literature, and art, that symbols in life provide an expressive function, that symbols in science express specific concepts, that symbols in literature and art represent experience, and that it serves the artistic-aesthetic interpretation of reality. "In the context of any piece of art (in folklore and literature), a symbol is an element (image or detail) and a series of words, along with the lexical significance expressed by itself, conditional we realize that it creates a stable artistic association," he claims. It is highlighted that the symbols in folklore are of conventional character, that this tradition has been created for ages, and that it is historically tied to the people's lengthy past and varied mythological beliefs in numerous areas. It points out that whereas symbols in folklore can be seen in a private way related to the creator's talent, symbols in literature developed the leading characteristics of traditions, popularity, and the possession of a stable meaning.

We shall attempt to comprehend the meaning of common signs, that is, symbols that are frequently seen in folk tales and are directly related to the research topic. Fairy tales, as you may know, are rich with symbols and archetypes: awful witches, charmed forests, magical beans, talking animals, and so on. The perception of these symbols enables for a deeper knowledge of fairy tales in reader's mind

¹ Hotamov, N., Sarimsoqov B. Ruscha-Uzbekcha adabiyotshunoslik terminlarining izoxli lug'ati. – Toshkent, 1983. – B.293-294.

² Quronov D., Mamajonov Z., va boshqalar. Adabiyotshunoslik lug'ati. – Toshkent: Akademya nashr, 1997. – B.400.

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However, symbol interpretation ranges among cultures and continues to evolve. In the West, females tend to be symbolized by the color pink, whereas in the East, boys are generally represented by pink and girls by blue in color. The Eastern perspective is simple: pink-red is most similar to the "fire" color, indicating a man's character, while blue, the color of water, represents a woman.

Analysis and discussions.

The significance of the symbols remains essentially the same in the majority of popular fairy tales in world literature. As a consequence of the observations, it was discovered that the following symbolic images, which are commonly seen in folk stories, were mentioned numerous times:

Witches: In fairy tales, witches represent the dark and wicked aspect of humanity. The term "witch" is derived from the Latin word "wica," which means "wise." They were herbalists, healers, and midwives in real life, not the terrible forces described in fairy tales. Such depictions that are negative developed as a result of Christians' desire to separate God from nature, as opposed to pagan faiths that worshiped gods associated with animals and the ground. If divinity existed in the air/heaven, then evil had to exist on Earth. Because of their great healing and psychic powers, these witches are associated with earthlings and are frequently said to cooperate with dark forces associated with the devil.

Stepmothers - the image of them with the same meaning can be used instead of witches. They are presented as the exact reverse of a protecting mother, and, like witches, represent a power that must be destroyed in order for the main character to survive and grow. They address the nature of the ego, or the "I" within a person. The stepmother character, like a witch, uses her inner ego for manipulation. The witch from the fairy tale "Hansel and Gretel" seeks to persuade the children that she wants to help them by providing them with food and a cozy bed. His true purpose was to eat Hansel. Ego is a force that attempts to rule over the person's being. If a person desires something, he will go to any extent to achieve it. Children's love of sweets and pastries also puts them in risky situations. As consequently, self-indulgence is the core of all pain. We fall into the ego's trap as it feeds our need and lust. As a result, we become victims of our own ego, like Hansel, who was seduced by the old witch and fell into the prison.

The illustration of birds. Birds are used as messengers from the upper worlds for humanity to hear messages from God because of their ability to fly. Different civilizations have different beliefs about shamans, who dressed in feathers and attempted to communicate with the gods. Birds also signify the ability to pull the human soul out of difficulties. They usually support the heroes of the fairy tale,

communicate frequently, and can provide with useful suggestions.

The image of rose. Gretel transforms into a rose in early versions of Hansel and Gretel. In the folk tale "Beauty and The Beast" The Beauty asks his father for a rose and injures herself with a rose thorn. This is one of the most common symbols in folklore. The rose represents the holy path. According to legend, the red rose is made from the blood of Jesus Christ shed on the cross. In other words, Christians thought that by his death and the path he demonstrated, people would be able to conquer their sins and find their way to the heavenly home. Rose thorns were used to express the negative actions and sins of a person in the form of pain and suffering, to maintain balance and help in choosing the right path.

The image of mirror. Previously, a mirror was considered an expensive item, and it was only in the houses of wealthy people. Mirrors were also used to see one's own reflection to predict the future and see the past. There is also information that they were treated with chemicals prepared in a special alchemical way to increase human mental abilities. Thus, the mirror is not a mirror as we know it, but an instrument of the seer, which is why it is often assumed that Snow White's stepmother's mirror can speak. Crystal balls and pure water have similar properties. So, mirrors are a gateway between this world and other worlds or levels of consciousness.

Wolf and other animals. In Christian symbolism, the new recruits are often compared to sheep, and the wolf is seen as a monster and an instrument of Satan. A wolf also can be seen as predatory person. In some versions of Little Red Riding Hood, she goes to bed with the wolf, believing it to be her grandmother. He is innocent and cannot distinguish between the sweet goodness of his fake grandmother and the evil nature of the wolf. A wolf demands attention, it seeks satisfaction in any situation. His conscience allows him to cheat both of them by eating his grandmother. Other wolf-like figures, such as the rabbit, cat, fox, sheep, or crow, are "wise" fools who use tricks.

Like old jokes, these symbols highlight the flaws in society and nature. These characters can be rebellious, humorous, mocking authority and playing with the laws and accepted norms of the universe. Because their work is fictional, such characters can live, die, change their appearance, cast spells, and even speak in animal form.

For example, Puss in Boots depicts a cat wearing a big fur hat and boots. He is also associated with the wizard Merlin in Artorias legend.

As the trickster, Hermes represents good versus evil, chaos in creation as opposed to the reality of order. He is not the creator of the world, but the destroyer of peace. By questioning his own norms, he changes those around him and encourages the reader to imagine the world through time and physical illusions. He is depicted in books of the same name by

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Joel Chandler Harris, Carlos Castañeda or Brer Rabbit, as he deceives his students and teaches Coyote in the Indian medicine tradition.

Brer Rabbit is a braggart and a big liar. Depicted as half-god, half-beast, the Trickster is a divine and "wise" fool who answers to no one. He often thinks of his own interests and rebels against the authorities, makes serious jokes and often makes clever plans that destroy him. Its purpose is to challenge established ways of thinking and encourage a light-hearted look at it. In this case, it is a transformation matrix. A trickster often appears in mythology as a response to a problem, a dragon/witch/negative demon.

Tricksters are used as a masculine figure because they have qualities usually associated with men, such as aggression or anger, sensuality, and self-destruction, and are associated with lust or ego. However, the Trickster can be a woman as well as a man. When one finds signs or people appearing in one's life, it indicates that changes are taking place, which may be internal, external, or perhaps both.

Trees or forests. Sometimes in life we get lost in the dark, impenetrable, emotional forest. Like the 12th-century writer and poet Dante, many fairy-tale heroes find themselves in this predicament. They suffer from betrayal, fear loneliness and need physical and spiritual strength to face them. If we remember that Snow White was left alone in the forest when her stepmother demanded that the woodcutter kill her, we can see the forest from the trees, as if the world was depressed and unable to find a way out. However, this confusion gives us the opportunity to change our lives and start on a more meaningful path.

The forest is considered feminine or consciousness because the light (masculine) cannot shine in its depths. To heal, you have to deal with the shadow side of the mind, you can't live in fear of being unacceptable. The image of the forest also has positive aspects. Likened to strong female energy, it can represent shelter and protection. It means diving into our unconscious. Tapping into our dark, unknown sides is common in many fairy tales and is represented by enchanted forests, wild beasts, deep oceans, deserts, among other things (Even in religion, Jesus

goes to the desert like Prophet Muhammad). This is a place of testing and we must learn to replace fear with faith. We cannot find our way out of the forest or turn back until we have completed this stage of our journey, but it also comes with danger and we need courage to overcome its dangers. In the forest, if we want to enter the light, we must fight against the forces of darkness within us.

Conclusion.

If the lexeme "symbol" evokes the connotations of a sign, a sign in the human imagination, the word "symbolism" means ownership of a symbol, a sign, a sign. As evidence of our opinion, we considered it permissible to cite the explanation given to these concepts from the explanatory dictionaries of the English and Uzbek languages.

The language of folklore works is literally the language of symbols. Understanding symbols in folklore makes it possible to reach the essence of any work. In the system of symbols in folklore, images related to color are widespread in all nations of the world and have entered into a traditional form.

2. If colors make it possible to distinguish the color and sign of all things in nature, when they are transferred to folklore and art, they show different moods, emotions, thoughts awakened in the mind, faces in life used as a means of artistic expression of various events. Among the colors, the trio of white, red and black plays a very important role. The harmony in the semantics of these colors in the rituals and folklore of the peoples of the world was related to the processes of understanding and meaning in the beginning of human thinking.

3. Colors have different meanings according to the nature of each field. In English and Uzbek folklore and literature, colors primarily carry symbolic meaning. It served as an expression of the inner world of a person adapted to "rework" the external world. In general, if the comments in English and Uzbek are compared, it is shown that their first meaning is denotative, and the second and subsequent meanings are connotative.

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Dilafuz Faxriddinova Shamsiddinova
Uzbekistan state world languages university
Teacher, Faculty of English Philology
Uzbekistan, Tashkent
dilafuzshams@gmail.com

ESL INTERACTIVE GAMES FOR ENGLISH LEARNERS: KAHOOT AND JEOPARDY

Abstract: This article focuses on teaching vocabulary using online Games. Through new applications based on game technology in teaching, students are expected to be interested and contribute to the mastery of their vocabulary in English. The acquisition of new content is effectively attained by using Kahoot and Jeopardy.

Key words: vocabulary, effective teaching, vocabulary, motivation, English language, game activities, Kahoot, Jeopardy.

Language: English

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Introduction

Linguistic researchers are quite interested in learning vocabulary using games. Donmus (2010) considers that “implementing games into parts of education has been shown to improve student language vocabulary mastery while making language education seem enjoyable”. This relates to Kuzu and Ural’s belief that “when games and education are combined, they synergize with entertaining education.” Students who learn through games have better emotions and behaviors, and they are more motivated to study.” Teaching vocabulary to children may differ from teaching vocabulary to adults.

They have been influenced and engage in different ways. Elementary students are distinguished as early and young learners who are different and engaging; hence, teachers are required to be highly creative and to produce numerous innovations and ideas in teaching English at this level. Of course, if the teacher is unable to excite these young learners, this will be a challenging assignment. The aim of young learners to study is mainly to get new experiences in their life while playing. As a result, young children

only want to study using an interactive learning approach and a game application.

The primary goal of this study is to discover how to create game materials in order to provide answers to the question “How can we easily memorize vocabulary items and how can we promote effective ways to learn English vocabulary in a relaxed manner?” The findings imply that using games in foreign language acquisition may enhance the process in numerous ways, including vocabulary memorization. The results demonstrated that games boost the occurrence of memorization, and hence may be a more efficient technique to foster language acquisition.

Jeopardy

The Jeopardy game is based on the television quiz show. A Jeopardy game is an activity that teaches pupils to consider the questions that could lead to a certain answer. This quiz show has an innovative answer-and-question style in which participants are given hints in the form of answers and must respond in the form of a question.

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Figure 1. Screenshot of Jeopardy (<https://jeopardylabs.com/>)

This game can encourage learners to think creatively about a specific answer. As a result, even after knowing the answer, they can recall the words. Because of the competitive character of the game, a jeopardy game can also increase student motivation. Furthermore, this game may be utilized as an interactive activity in any subject, and it encourages group cooperation, which develops the learners' social and communicative abilities.

Kahoot!

Kahoot is an interesting and interactive learning tool that makes learning more pleasant. It's a terrific method to learn new things while also having fun. Kahoot provides many features that make learning more interactive and fun, such as quizzes, surveys, and games.

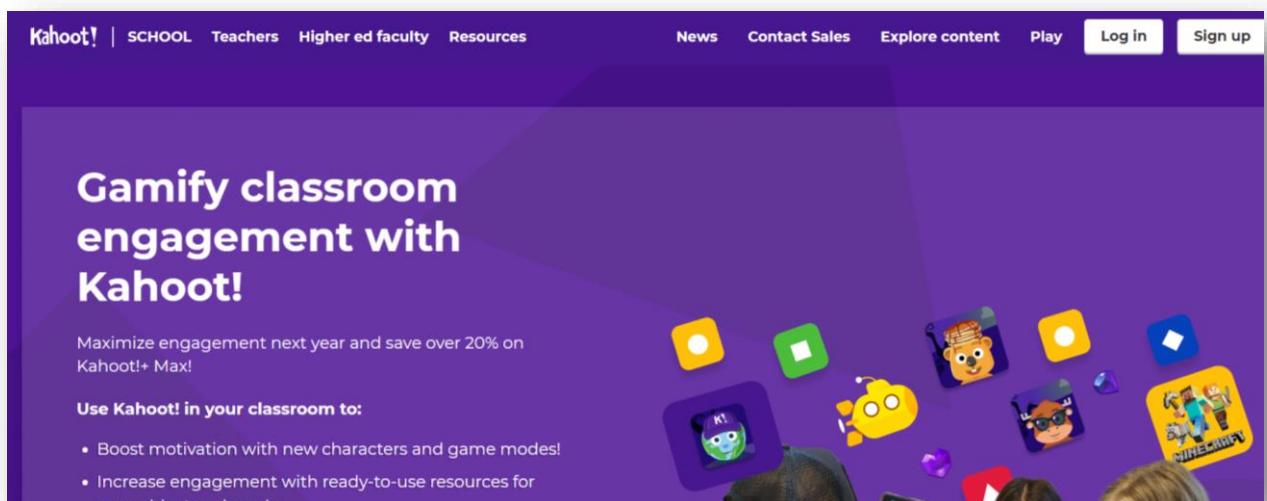


Figure 2. Screenshot of Kahoot (<https://kahoot.com/schools-u/>)

The study of Kahoot, which combines the use of games and ICT in education, is particularly appropriate in English classrooms to improve student learning, claims Budiati (2017). Students who have

used Kahoot during the learning process are eager to join the class, more attentive in the English language, interested in learning more about what they have learned, and able to explain what they have learned to

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others thanks to the use of Kahoot in the classroom. According to Bicen (2018), gamifying classes with the Kahoot application might give students an impact that boosts their ambition and motivation to learn.

To refresh the vocabulary of ESL or EFL students, we can use any exercise, like “In other words.” This exercise was inspired by Kennings. A kenning is a term that refers to an object without using

its name. It occurs frequently in poetry written in Old Norse and Old English. As an illustration, a helmet could be referred to as a “head protector.” Students collaborate in groups or couples.

Teachers can design a Kahoot game based on this method instead of making noun cards, as shown in the screenshot below:

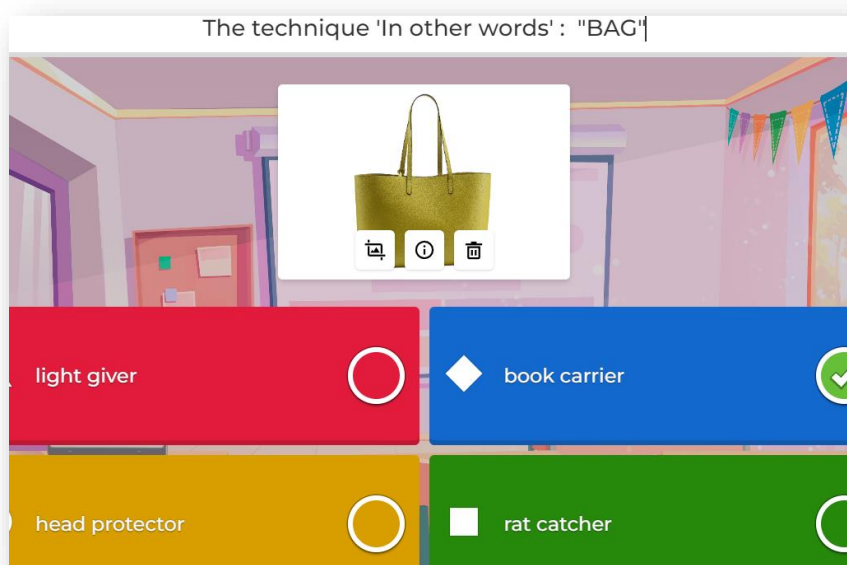


Figure 3. Screenshot of creating a new vocabulary quiz in the Kahoot platform (<https://create.kahoot.it/creator>)

Methodology

This study employed an online survey via a poll in the Telegram platform to collect data. A survey collects information from a small group of people in order to generalize the results to a larger population. Surveys are a valuable source of data and insights for practically everyone in the information industry, from governments and private companies to media outlets and academic institutions. Every year, thousands of surveys are developed to better understand the choices, interests, and experiences of customers and workers.

Online surveys include a variety of question styles, including single-choice, multiple-choice, and open-ended text. In this article, a single choice survey was done after a month of experience teaching English vocabulary to one hundred Uzbekistan State World Languages University students.

Results and Discussion

The findings of this study show that students are motivated and excited about attending English courses since they are familiar with the two online games. Furthermore, their excitement for the subjects improved, as did their academic achievement.

To assess the effectiveness of learning vocabulary through games in the classroom, we want to know how students’ experiences help with their learning and what progress they gain. Specifically, can we apply games as an effective means to make students feel more comfortable and interested in learning the subject of vocabulary. To achieve our goal, we focused on the perception and attitudes of our students as well as what students gained through their learning with vocabulary games.

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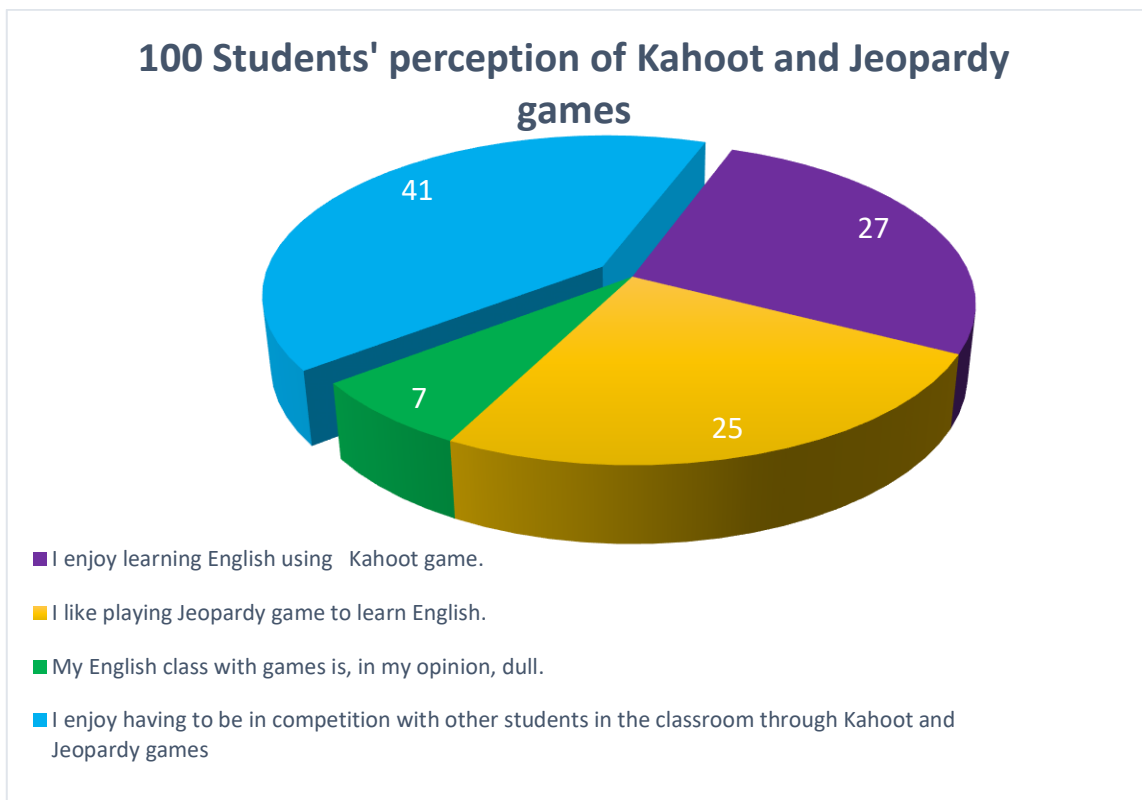


Figure 4. The results of the survey\ poll

The strategy includes playing a variety of games in our sessions to evaluate the students’ reactions to this approach to vocabulary development. Additionally, we sought to learn if there were any issues that arose during the instructional process. To better understand the expectations, challenges, and development of our students’ vocabulary acquisition processes, we also conducted a survey of them on the Telegram platform in the form of a poll. In the survey, 100 students of the university participated and only few learners found the online game are boring, yet majority of the participants chose the option that these two games motivate them to learn the lesson in positive way.

In order to understand more about the students’ thoughts and personal experiences with vocabulary learning, we also carried out a brief post-class interview. Consequently, most of the participants thought that these two online games the most effective ones in learning and checking their vocabulary competences. However, there are a few difficulties may occur while using these two games in a class. For example, the most common problems are not stable internet network and technical problems during paying the games such as low battery of gadgets or connecting to the large screen to show the results.

Conclusion

Games have been proven to be advantageous and helpful in teaching vocabulary in a variety of methods under such conditions. First, games let kids unwind and have fun, which makes it easier for them to learn and remember new terms. Second, since games frequently feature friendly rivalry, they maintain students’ interest. These inspire English language learners to engage with and actively participate in the learning activities. Third, vocabulary games help students utilize English in a flexible, conversational manner by bringing context from the actual world into the classroom.

Thus, it is impossible to question the importance of games in the teaching and acquisition of vocabulary. However, selecting the right games is crucial if you want to get the most out of vocabulary games. The number of pupils, skill level, cultural context, time, learning topic, and classroom conditions are all things to consider if a game is to be done.

In conclusion, using games to acquire vocabulary is an engaging and effective strategy that can be used in any classroom. The findings of this study imply that games are utilized not just for enjoyment but, more significantly, for the practice and review of language training, helping students to become more proficient in their studies.

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Kamola Azamatovna Iskenderova

Uzbekistan State World Languages University
Teacher of English Philology faculty, Uzbekistan, Tashkent

iskenderovakamola@gmail.com

COMPARATIVE ANALYSIS OF THE LINGUACULTURAL FEATURES OF THE SOMATIC PHRASEOLOGIES WITH THE COMPONENTS OF “HEAD”, “EYE” AND “HAND” IN THE ENGLISH AND UZBEK LANGUAGES

Abstract: This work has set as its aim to analyze English somatic phraseological units that contain three body organs - head, hand, and eye. The analysis was carried out to prove or reject the hypothesis that somatic phraseological units represent an essential part of the core vocabulary in English and when they are compared to the Uzbek language and analyzed from the cultural point of view these somatic phraseological units are similar in the meaning, structure, and usage as well as they have some differences.

Key words: somatic phraseological units, cultural linguistics, linguoculturemes, idiomatic expressions, equivalent.

Language: English

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Introduction

A special layer of the language – phraseology - a set of stable phrases with independent meaning appeared thousand years ago. Modern English phraseology is so vast and diverse that every aspect of its study is noteworthy.

In our country, special attention is paid to the study of English. Without being aware of phraseology, it is impossible to have good knowledge of the language. It would be easier to read and comprehend if we are familiar with the phraseological units of English and native languages.

The use of phraseological units contributes to the improvement of the phraseological creativity of all speakers of one or another language.

The English language is rich in somatic phraseological units, which are poorly studied and require further research.

Language is a cultural activity and, at the same time, an instrument for organizing other cultural domains. Speakers take account of discourse situations, which are structured by culture. Paul Friedrich referred to this nexus of language and culture as "linguoculture" and Michael Agar called it "languoculture". Language is shaped not only by special and general innate potentials but also by physical and sociocultural experiences. It is the concurrence of language - as - culture and language - governed - by - culture that warrants an approach called cultural linguistics.¹

Methods.

The work uses a comprehensive analysis methodology, including:

¹ Palmer G.B. Applied cultural linguistics : Introductory remarks to the session on applied cultural linguistics . Paper presented at

the 8th International Cognitive Linguistics Conference 2003. La Rioja , Spain , July 2003. C.25-31

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- ✓ the component analysis aimed at identifying cultural significance in the semantic structure of lexical units included in the sphere;
- ✓ the semantic analysis method that examines the meaning of linguistic units. Phraseological units in this study comprise somatic phraseological units that are subjected to semantic analysis to determine the causes for their development, consolidation, and functioning in the language system;
- ✓ the comparative-typological method allows for the establishment of similarities and distinctions as well as the identification of each language's national and cultural uniqueness;
- ✓ the cross-cultural analysis, involving the comparison of the SPhUs with other languages and cultures, in order to identify the national and cultural specifics of the SPhU.

Analysis.

Linguocultures, or culture-relevant language units, play an enormously important part in world image representation. Linguoculture is a complex, interlevel language unit, a dialectical unity of linguistic and extralinguistic components, the association between a verbal sign's form, semantic content, and cultural meaning. The most obvious linguistic traits that represent national culture are the phraseologisms and premier, metaphors, and symbols. Mythology, archetypes, stereotypes, conventions, rituals, and religious beliefs are examples.[1]

Before delving into the gathered cases, we'd like to emphasize D.Kristall's concept. He recognized that PhU are associated with the nation's own characteristics, culture, way of life, customs, and psychology, and called them "national idioms."

And analyzing the SPhUs from a linguocultural point of view, we should take into account their etymological aspect too. A.V.Koonin in his research works studied phraseological units from the etymological point of view. He grouped PhU, having analyzed as the following:

➤ Phraseological units of the biblical origin:

Not to let one's left hand know what one's right hand does

During the Sermon on the Mount, Jesus used the term "not let our left hand know what our right hand is doing" to refer to our charitable conduct. "However, when you give to the poor, do not let your left hand know what your right hand is doing so that your giving is hidden." And your Father will reward you in secret." Clearly, Jesus' order is not literal, but what does it mean? In reality, Jesus is speaking about the state of our hearts when we contribute. In Jesus' day, hypocritical people would donate generously to those hypocritical people who would donate

generously to those who were in need and were open about it. They wanted people to notice and appreciate their kindness. While they were honored for their kind efforts, Jesus told His audience that "they have received their reward." In contrast, those who give "in secret," for the joy of giving rather than for the appearance of generosity or spirituality, will be rewarded by God.²

O'ng qo'l qilganini chap qo'l bilishi shart emas.
This proverb means the same meaning as in English and its origin comes from Muslim religion. According to our religion, Muslims according to our religion, should do charity and assist those in need. It is prudent to resist the temptation to be arrogant that may arise from making our generosity public. The most important thing we must keep in mind is the reason for our donation.

Phraseological units of literary origin:

Shakespeare's phraseological units have significantly expanded English phraseology. After the Ph.U of biblical provenance, this is the second largest group. The majority of them can be found in the works by Shakespeare only once, but they are fixed in dictionaries as phraseological units.³

the apple of (one's) eye - a cherished or favored person. This term is regarded to have Biblical roots. However, the phrase "apple of my eye" dates back to the time of King Alfred the Great of Wessex in AD 885. The line can also be found in the Old English poem "Gregory's Pastoral Care." However, the term lingered for many years until becoming famous in the early 1600s. The word was originally used in everyday speech by the English playwright William Shakespeare. Shakespeare used the phrase in "A Midsummer Night's Dream." The phrase derives from the old belief that the pupil of the eye was a solid, apple-shaped body that was valuable since it was necessary for vision. The counterpart in Uzbek is "Ko'zimning oq-u qorasi," which has the same meaning.

The PhUs reflecting the English people's traditions:

- *two heads are better than one* used to say that it is easier for two people who help each other to solve a problem than for one person;

- *bir yoqadan bosh chiqarmoq* ma'nosi: birgalikda / do'stlikda biror ishni bajarmoq.

- Uzbek people use the phrase "bosh omon bo'lsa, do'ppi topiladi" means that the most important wealth for a person is his health. If there is health, everything else can be found, but nothing else can find or return health. The initial - cultural component is proverbially expressed by the realia of "Do'ppi". The skullcap is the national headdress of the peoples of

² www.compellingtruth.org/left-hand-know-right-hand-doing.html

³ Ashurova D. U., Galieva M. R. Cultural Linguistics. – Tashkent, Uzkito savdonashriyot, 2019.

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Central Asia, which in the recent past everyone considered himself obliged to wear. The Uzbek skullcap is a national thing that distinguishes the Uzbek people from other nations, and Uzbek men wear it with pride. In addition to this idiom, there are many other expressions related to the "do'ppi". And they are all culturally marked: "do'ppisi tor keldi", "do'ppisi yarimta", and others.

In English, there is an expression *wet the baby's head* – the process of celebrating the birth of a baby. This expression reveals the ritual of marking the birth of a child in England and is a clear example of cultural traditions in the language.

➤ **the units, denoting beliefs, and superstitions:** "qo'l bermoq".

In the first meaning, it means "qo'l berib salomlashmoq". In accordance with ancient tradition, it was the symbol of a sacred person. (ya'ni, qo'l bergan eshon, pirining kaftini tutib murid bo'lgan. Qo'l bergan kishi bir necha yil shogird bo'lib yurgach, Pirining oq fотиhasini olguncha sidqidildan xizmat qilgan. O'zbek tilida bu ilohiy hurmatni anglatadi. Ingliz tilida esa bu yordam bermoq, ko'maklashmoq demakdir).⁴

So, based on these facts, our task is to analyze the somatic phraseological units from linguo-cultural point of view. It is essential to mention that there is a set phrase "boshida danak chaqmoq" in Uzbek. Word for word it is rendered that "crack nuts on one's head" but it means that is "make somebody's life misery by nagging". It is very common among Uzbek people in daily life.

The English somatic phraseological unit, "loose one's head" means not to know what to do at all.

But the Uzbek people use "boshi aylanib qolmoq va boshini baloga giriftir qilmoq" – as to give this meaning, not as - bilmagan, guvohi bo'lmagan ishga aralashmaslik, burnini suqmaslik".

In English "break a leg" is used to encourage a performer before a performance, traditionally it is bad luck to wish a performer good luck, so a performer is wished bad luck in a hope of causing good luck. But in our nation to wish, even to think about bad luck may lead to misfortune, so that "qo'lingdan keladi!" (bo'sh kelma, omad senga yor bo'lsin) phrases are usually utilized as encouraging expressions.

English SPhUs "hide one's head" means to disappear for some time or not to be able to look at someone because of shame.

But in Uzbek "boshini quyi soldi" means to agree with somebody or not to be able to look at someone because of shame. We can see from these examples there are some similarities between English and Uzbek somatic phraseological units with the component "head".

Some phraseological units like "boshi aylanmoq", "boshi qizib ketmoq", "boshi aylanibketmoq" (feeling dizzy), "aqilli bosh" (it means a clever person) – "have a wise head" – express linguocultural specificity of the SPhUs in Uzbek. But sometimes "head/bosh" expresses the meaning "muhiim/important".

And in Uzbek there is phrase "aqlli odam" (a clever person). If we express with phraseological unit we can say that is "kallali odam" (a person has a wise head).

"Boshi joyida" - "aqlli joyida" (word for word it means "the head on its place" it means that a person who is very tactful to do something);

"Boshi ishlaydi" (word for word it means one's head works) that means a person who does something cleverly; a fat head - a dull or stupid person.

And in Uzbek there is a phrase "xomkalla" - a person who does something without thinking but in English there is no phrase "empty head" instead they use *blockhead*.

Khilichov tried to identify from the cultural point of view some somatic phraseological units with the components "head / bosh" and "hand / qo'l" in his article named "About phraseological synonyms. In his work, he studied three groups of phraseological units with the component "bosh".

1. Synonymic expressions with the component "head bosh". For example, "boshiga yetdi - boshini yedi", "boshi osmonda - boshi ko'kka yetdi", "boshi shishdi boshi qotdi" and etc.

2. Synonymic expressions with the word "head and its parts - bosh". For example,

"boshi achimoq miyasi achimoq", "boshida danak chaqmoq miyasida danak chaqmoq", "boshi g'ovlab ketmoq miyasi g'ovlab ketmoq kallasi g'ovlab ketmoq".

3. Synonymic expressions which are not related to "head - bosh". For instance,

"boshiga ko'tarmoq shovqin solmoq", "boshidan kechirmoq ko'nglidan o'tmoq", "boshini bukmoq - yuzini yerga qaratmoq" and etc.

Synonymic phraseological units one of them has a component "head" and the other has quite another component.

We see that linguocultural peculiarities of phraseological units exist both in the English and Uzbek languages.

And phraseological units with the components "bosh - head" are utilized with some verbs like "o'ylamoq", "hisoblamoq" (to think / mind/mean), and the word "miya - brain".

1. And we have somatic phraseological units with the component "hand". For example, "to give a golden handshake" as a way of dismissing someone

⁴ Васкаков Н.А. Предложение и словосочетание в тюркских языках // Вопросы составления описательных грамматик. М.: Hayka, 1961.-С. 71

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with a big sum of money has no somatic equivalent expression in Uzbek.

SPhUs "to give a golden handshake" means that a person has worked in some company or corporation for a long time and fulfilled his duties honestly and very well. The time has come and he is going to retire. The company gives a farewell party in his honor and he gets a bonus - a check for a large sum of money.

2. "to give a glad hand" in the sense of giving a warm greeting to someone is *fare* and being "have an open hand" is synthetically expressed by the Uzbek "qo'li ochiq bo'lmoq".

Results.

The analysis demonstrates that, while the centrality of the hands in the structuring of idiomatic and figurative uses of the set phrases in the two languages is uncontroversial, differences can be identified as a result of the socio-cultural filters that shape the profile of one and the same conceptualization process as well as a different way of conceptualizing the same experience. The comparison between English and Uzbek expressions with "hand" / qo'l makes it sufficiently clear; it is believable that it would be impossible to general phraseological in such terms as to gain insights into cognition and conceptual systems without culture and history as mediating frames. On the other hand, it is true that it is not always safe to infer how people think from the way they talk, it is also true that languages express their sociocultural specificities, or preferences in terms of body parts in other areas than figurative uses.

However, it should be noted that, even the analysis of the idioms above show the difference between the cultures of both nations there can be seen some phraseological units with universal human perceptions and experience. As an example, we can give phraseological units with somatic (parts of body) components. "Idioms associated with the component "head/bosh" fall under the semantic category "intellect, thinking", phraseological units with constituent "hand/qo'l" to the semantic group "possessing", as well as the semantic group "attention, perception" is conveyed by phraseological units with "eye/ko'z". Consequently, the phraseological units containing parts of the human body usually the same in many languages, because parts of the body are correlated with an identical function in all cultures."⁵

In this paper, the linguo-culturological features of phraseological units of the English and Uzbek languages are analyzed as well as National-cultural features of phraseological units are determined by extralinguistic factors. Under extralinguistic factors, the combination of factors that are important when creating social, economic, and cultural prerequisites and conditions for the internal structural and functional development of language in the development and study of phraseological units and which serve as a prerequisite for submission of national nature. In both English and in Uzbek, many set expressions reflect the way of life, customs, traditions, and national characteristics of the people.

Table 1.

Came into one's head	Kallasiga kelmoq
Hold one's head high	Boshini baland tutmoq
The apple of someone's eye	Ko'z qorachig'i
From head to foot	Boshdan oyoq
All eyes and ears	Butun vujudi quloq
Cabbage head	Qovoq kalla
Give a hand	Yordam qo'lini bermoq
Have one's nose in the air	Burni ko'tarilgan
Not to let one's left hand know what one's right hand does	O'ng qol qilganini chap qo'l bilmasin
"to give a glad hand"	Qo'li ochiq bo'lmoq

The formation of phraseologies requires the use of phraseological units connected with food elements. The language's phraseological composition is important in the perception and representation of people's national and cultural identities. The phraseological units containing the element "food" are conveyed throughout every language's phraseology because they assist to reflect people's worldviews and

cultural identities. Language material study has revealed that phraseological units of food codes have a specific form as well as a wide range of meanings and connotations.

The best example of a food idiom is the expression "Cabbage head," which is used in English to describe a foolish person, while the idiom "qovoq kalla" is used in Uzbek to express the foolishness of a

⁵ Ashurova D. U., Galieva M. R. Cultural Linguistics. – Tashkent, Uzkito savdonashriyot, 2019.

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person. Pumpkin is a popular and extensively prepared vegetable among Uzbeks. The outside of the pumpkin is firm, and the inside is hollow when the core is removed. From its outer appearance, it appears to be a large head, however, it is hollow on the inside. As a result, Uzbeks use this phraseological unit to represent an empty head. Unlike the Uzbeks, the pumpkin is not a popular vegetable among the British. However, cabbage is loved by them and consumed a lot. This is why both nations used two different vegetables to express the same concept.

Conclusion.

Phraseological units are one of the means of improving our speech. Sometimes it is easier to convey our thoughts and sense with the help of idioms rather than trying to find necessary words and sentences. However, they may cause big problems in translating into another language. It is not surprising that there are such set expressions that can be translated in different ways into other languages. The research provides the pairs of phraseological units that

have the same meanings and explained why they are culturally marked as well as why they are expressed in a different way in two different cultures.

In conclusion, it should be emphasized that, like many other linguistic units, phraseological units in the English language have been used in various studies. However, little study has been conducted on the linguocultural distinctiveness of idioms in English and Uzbek. In this chapter, we evaluated the significance of phraseological units in representing a nation's national and cultural identity using a contrastive approach. The results of the study show that the formation of phraseological units in each nation depends on the national world picture of each nation, therefore the same concept can be expressed using different idioms in two studied languages. The research examines English idiomatic units in relation to their Uzbek equivalents and exhibits idioms that represent the people's worldview and cultural identity. Based on our findings, we propose that greater research into culturally marked phraseological units in both languages is required.

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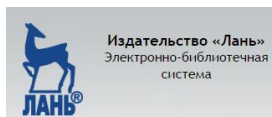
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