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Social Capital and Loan Repayment Capacity of Agripreneurial Groups' in Abia State, Nigeria

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Abstract

Entrepreneurship is the ability to take significant amount of risk while managing and organizing a new or existing business enterprise with the sole motive of making profits. Agricultural entrepreneurship, also known as agripreneurship is the ability of farmers or farm firms to take substantial risks while producing, managing, directing and marketing their agricultural produce. Agripreneurs are the agricultural entrepreneurs. Selected social capital variables such as years of membership in social groups/organizations, number of meeting attendance, cash and labour contributions of members, etc., were incorporated into the research to determine the agripreneurs' loan repayment capacity in Abia State, Nigeria. A multi-stage purposive sampling technique was employed to select the respondents. Greater percentage of the agripreneurs were male. Mainstream of them were in their active and productive age, hence could form groups for easy access to credit or loans in their respective enterprises. The agripreneurial groups' sourced their loans from money lenders, ROSCA (Rotating Savings and Credit Association), family and friends/relatives. Others sources were through microfinance banks, commercial banks, self-help groups, cooperative societies and savings collectors/mobile bankers. Majority of the agripreneurs were regarded as good credit risk. The major factors affecting the agripreneurial loan repayment capacity was trust, assets, interest rate and the loan duration. Agripreneurs should be encouraged to participate more actively in group activities, not just for what they can benefit but for what they can give; as effective participation accelerates access to pooled productive resources.

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1. Introduction

Nigeria's agricultural policy is targeting food security and import substitution to lessen the massive food import and conserve foreign exchange (Uche and Familusi, 2018). This can be achieved if we run agriculture as a business and encourage private-sector led engagements as the key objective driver. This commercialization orientation will involve the application of technologies, development of input supply chains, market linkages and financial services that engages the farmers individually as well as within their groups (Ado, 2017). These are critical to job creation, economic diversity and sustainable economic growth. The addition of business orientation into agriculture births agribusiness, while the incorporation of entrepreneurial principles into agribusiness establishes agripreneurship (Uche and Familusi, 2018).

Agricultural lending involves fostering credit facilities in cash and in kind to farmers, inputs suppliers, processors and agricultural marketers'. In Nigeria, agricultural credit has long been identified as a major input in the development of the agricultural sector. Over the years, credit offering institutions have found it comfortable and less riskier in granting loan facilities to groups as opposed to individual farmers or agripreneurs because they envisaged that members of a group would hold each other in check to prevent mismanagement of funds (Oladeebo and Oladeebo, 2008).

Consequently, considering the social connections which social capital provides to help people get along with each other and act more effectively than they could as isolated individuals (Okezie et al., 2020), several social capital variables such as years of membership in diverse social groups/organizations, number of meeting attendance, cash contribution of members, labour contribution of members, etc., were incorporated into the research to determine agripreneurs' loan procurement, disbursement and repayment capacity in Abia State, Nigeria.

Social capital, either through its function in social control or accumulation of mutual benefits is critical for successful operation of group lending. For instance, social links among borrowers may increase their ability to participate in credit transactions that involve some uncertainty about compliance. Specifically, social capital can lead to a better flow of information between lenders and borrowers and hence less adverse selection and moral hazard in the credit market. Social capital also potentially expands the range of enforcement mechanisms for loan defaulters in situations in which recourse to legal system is costly or impossible. Typically, loan is given to 'a group' without tangible collateral but with reliance on guaranteed repayment through group approval and joint liability among group members. The principle of joint liability stipulates that all group members are treated as being in default if any one member of the group does not repay her or his loan. The enforceable trust is the source of social capital and is appropriable by both lenders and borrowers. For the borrowers, it facilitates access to credit and for lenders, it

yields approval, expedites transactions and insures against risk of default (Olomola, 2008).

The study examined social capital and loan repayment capacity of agripreneurial groups' in Abia State, Nigeria.

2. Research Methodology

2.1. Study Area

The research was carried out in Aba North Local Government Area (LGA) of Abia State, Nigeria. Aba North LGA is one of the 17 Local Governments Areas of Abia State. Its headquarter lies in the town of Eziama Urata. Aba North is strategically located in the southern part of Abia State. It shares boundaries with other Local Governments like Ossioma, Aba South, Isiala Ngwa South, Ugwunaagbo and Obingwa Local government Areas of Abia State. The LGA is a commercial center filled with lots of businesses/firms, agencies, social institutions and governmental and non-governmental organizations. There are lots of financial institutions (formal and informal) spread all over the LGA. The citizens were predominantly Igbo tribe.

2.2. Sample Selection and Sampling Procedure

A multi-stage purposive sampling technique was employed to select the sampled agripreneurs. In the first stage, Aba North LGA was purposively selected because of the presence of numerous microfinance and agripreneurial groups. In the second stage, 40 agripreneurial groups were randomly selected from over a 1,000 agripreneurial groups in Aba North LGA. In the third stage, two (2) agripreneurs were randomly selected from each of the groups respectively, making it a total of 80 respondents chosen for the study. A well-structured questionnaire was administered to the randomly sampled respondents.

2.3. Analytical Techniques

Descriptive and inferential statistics were employed to analyze the data obtained from the study. The effects of social capital on loan repayment among the agripreneurial groups' was analyzed with the application of multiple regression model.

The model was specified as:

$$Y = f(X_1, X_2, X_3, \ldots\ldots X_{12}, \mu) \quad \textbf{(1)}$$

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \ldots\ldots + \beta_{12}X_{12} + \mu \quad \textbf{(2)}$$

Y = Loan repayment capacity of agripreneurial groups' in Naira (₦).

The explanatory variables specified in the model included:

(A) Group Characteristics

X_1 = Age of Group head/leader (in Years)

X_2 = Sex of Group's leader (Male = 1, Female = 0)

X_3 = Years of education of Group leaders

X_4 = Interest rate charge on loan (%)

X_5 = Loan duration (months)

X_6 = Trust (Members in Group can be Trusted = 1, Otherwise = 0).

(B) Social Capital Characteristics

X_7 = Density of Membership (%)

X_8 = Cash Contribution of agripreneurs in their respective Groups (%)

X_9 = Labour Contribution of agripreneurs in their respective Groups (%)

X_{10} = Decision Making index of agripreneurs in their respective Groups (%)

X_{11} = Meeting Attendance of agripreneurs in their respective Groups (%)

X_{12} = Heterogeneity Index of agripreneurs in their respective Groups (%)

The density of membership is a complete inventory of all associations/groups in which the agripreneurs belongs. The density of membership index was captured by the summation of the total number of associations to which each agripreneurs belongs. Cash contribution index was achieved by taking records of payment of membership dues and other contributions by the agripreneurs in their various groups. Meeting attendance index is the number of times the agripreneurs belonging to their various groups met over a period of time. It is simply the summation of attendances of the agripreneurs at meetings.

$\boldsymbol{\beta_0}$ = regression intercept; which measured the effects of the dependent variable, assuming other exogenous variables were held constants.

$\boldsymbol{\beta_{1\text{-}12}}$ = regression slopes/coefficients; which captures the effects of the dependent variable on the specified explanatory variables (X's).

μ = Stochastic error term.

To analyze the factors affecting loan repayment among the agripreneurial groups in Aba North LGA, the project makes use of the logistic regression model. Logistic regression is based on binomial probability theory. It is a mathematical modeling approach used in describing relationship of several exogenous variables to a dichotomous endogenous variable or a limited dependent variable (Agbemava *et al*., 2016). The logit function is employed because the dependent variable default is dichotomous, whereas the proposed covariates were mixture of continuous and

categorical random variables. Thus the model was chosen over others due to the data structure and purpose. The logit model is a derivative of the odds function. The odd of a function is the ratio of the probability of success to that of failure. Thus

$$Odds\ (Y = 1) = \frac{P(Y = 1/\ X = x)}{P(Y = 0/\ X = x)} \quad \textbf{(3)}$$

Where $Odds$ (Y = 1) is the odds of loan default; P (Y = 1) is the probability that loan default occurs given a set of explanatory variables and (Y = 0) is the probability of non-default given set of explanatory variables. If the odds of loan default >1 it implies there are higher probability of default compared to that of non-default. A value less than one indicate a higher probability of non-default than that of default.

The probability distribution of loan defaults in a given loan portfolio size for any given values of explanatory variables is binomial. Thus, the probability that the number of default of a given portfolio size **n** is exactly equal to size x, is given by (X = x) = $\frac{n!}{x!\ (n-x)!}\ px\ qn{-}x.$

Where q = $P\ y$ (0) = probability of non-default. This means that given a portfolio size n and probability of default P(Y=1) from a financial group or institution, one can use the theorem to perform risk control analysis.

The variables are defined as:

Y = Repayment capacity (loan repaid on time = 1, not repaid on time = 0)

X_1 = Income per group (₦/month)

X_2 = Trust (Members in Group can be Trusted = 1, Otherwise = 0)

X_3 = Off-farm Employment of group members (Yes = 1, No = 0)

X_4 = Asset (Total value of Assets in ₦ per group)

X_5 = Interest rate charge on loan (% / group member)

X_6 = Loan Duration (number of months)

X_7 = Political party affiliation (Member of Political party = 1, Otherwise = 0).

3. Socio – Demographic Variables of Agripreneurs in Aba North, Abia State

Recorded in Table 1 are the minimum, maximum, mean, frequency and percentage distribution of the agripreneurs' socio economic variables.

Table 1: Summary of Socio Economic Profile of Agripreneurs' in Aba North

	Frequency		Percentage (%)
Gender	Male	52	65.00
	Female	28	35.00
Total		**80**	**100**
Age (Years)	20-30	23	28.75
Minimum (20)	31-40	31	38.75
Maximum (60)	41-50	19	23.75
Mean (38.94)	51-60	7	8.75
Total		**80**	**100**
Marital Status	Single	41	51.25
	Married	30	37.50
	Divorced	6	7.50
	Widowed	3	3.75
Total		**80**	**100**
Educational Level	No Formal Education	13	16.25
	Primary Education	29	36.25
	Secondary Education	32	40.00
	Tertiary	6	7.50
Total		**80**	**100**
Household Size			
Minimum (2)	2-4	31	38.75
Maximum (10)	5-7	39	48.75
Mean (6.01)	8-10	10	12.50
Total		**80**	**100**

Source: Field Survey Data, 2018

Table 1 shows the socio economic characteristics of the agripreneurs in Aba North, Abia State. From Table 1, it was observed that 65% of the agripreneurs were male, while the other 35% were female. The result suggests that greater percentage of the respondents were male.

Age distribution of the sampled agripreneurs shows that 28.75% were within the age brackets of 20-30 years, while 31-40 years represents 38.75% of the sampled agripreneurs; whereas 41-50 years and 51-60 years represent 23.75% and 8.75% of the respondents respectively. The minimum age of the agripreneurs in the study area was 20 years; while the maximum years were 60 years. The agripreneurial groups have an average age of 38.94 (approximately 39 years). This result infers

that mainstream of the agripreneur were in their active and productive age; hence could form groups' for easy access of credit and loan.

A total of 51.25% of the agripreneurs were single; while 37.50%, 7.50% and 3.75% were married, divorced and widowed respectively. The result implies that majority of the agripreneurs in the study area were single.

Educational distribution of the respondents in Table 1 reveals that 16.25% and 36.25% of the agripreneurs had no formal education and had primary school education respectively; while 40% and 7.50% had secondary school certificate of education (SSCE) and bachelor's degree respectively. The result surmises that preponderance of the sampled agripreneurs had secondary school education. This infers that the respondents were reasonably educated.

Household size of the agripreneurs depicts that about 38.75% had a family size of 2-4 members; while 48.75% had household size of 5-7 persons. Only 12.50% of the sampled agripreneurs in the study area had household size of 8-10 persons. The minimum and maximum household size was 2 and 10 persons respectively; however the average household size was 6 persons. The result infers that the household size of the respondents were quite moderate. The findings are in consonance with Yusuf (2008) who found that households in Nigeria had an average of 6.0 - 7.0 persons. Similarly, Kanu (2020) noted that the average household size for cocoa farmer's agripreneurs in Abia state was 7 persons. This result may have positive effects on the availability of family labour for the agripreneurs which could lead to increase in the level of their output/production.

Table 2 shows additional socio demographic indices for the agripreneurs in the study area. The additional socio economic variables included the agripreneurs' years of experience in their respective agripreneurial enterprises, as well as their average monthly income and credit/loan demand status. Further, these demographic variables were employed as exogenous variables in analyzing the factors affecting effects of social capital and agripreneurial group loan repayment capacity in the study area.

The average years of experience of the agripreneurs was 9.78 (approximately 10 years) with 1 year and 25 years as the minimum and maximum years of experience. Majority of the agripreneurs (40%) had 6-10 years of agripreneurial experience in their respective enterprises. The mean income of the entrepreneurs in the study area was ₦51,762.50. Additionally, a total of 76.25% of the agripreneurs noted they requested for credit/loans from their agripreneurial groups' and other financial institutions (formal and informal); while the other 23.75% specified otherwise. The results submit that greater percentage of the agripreneurs in the study area requested for credit/loans. Contrarily, Kanu and Nwaru (2020) observed that poultry agripreneurs' in Ikwuano LGA, Abia state were unwilling to request for

credit/loan, this may be because of the bureaucratic bottleneck in obtaining credit/loans from financial institutions; not counting disagreements within members of the agripreneurial groups.

Table 2: Additional Socio Economic Variables of Agripreneurs in Aba North

		Frequency	Percentage (%)
Years of Experience in Your Enterprise	1-5	18	22.50
	6-10	32	40.00
Minimum (1)	11-15	15	18.75
Maximum (25)	16-20	9	11.25
Mean (9.78)	21-25	6	7.50
Total		**80**	**100**
Income per Month (₦)	7,000-17,000	14	17.50
	18,000-28,000	12	15.00
	29,000-39,000	10	12.50
Minimum (7,000)	40,000-50,000	8	10.00
Maximum (99,000)	51,000-60,000	20	25.00
Mean (51,762.5)	61,000-70,000	7	8.75
	71,000-80,000	4	5.00
(@ ₦369.85 to $1.00)	81,000-90,000	2	2.50
	91,000-99,000	3	3.75
Total		**80**	**100**
Requested Credit or Loan?	Yes	61	76.25
	No	19	23.75
Total		**80**	**100**

Source: Field Survey Data, 2018

4. Analysis of the Volume of Loan Repaid by Agripreneurs in Aba North, Abia State

The demand for loans among agripreneurs in Aba North cannot be over emphasized as it enables them to establish and expand their enterprises. Table 3 is the average amount of loan repaid by the agripreneurial groups' in Aba North, Abia State, Nigeria. The group sourced their loans from money lenders, ROSCA, family and friends, microfinance banks, commercial banks, self-help group, cooperative societies and savings collectors/mobile bankers. Karlan (2006) specified that during group scheduled meetings or social gatherings, several activities occur including loan procurements and repayment, cash contribution, trainings, etc.

In the same vein, Table 3 shows that the total amount of loans requested by agripreneurs from money lenders was ₦450,000; while that of ROSCA and family/friends was ₦350,000 and ₦145,500 respectively. Loans requested from microfinance banks, commercial banks and self-help groups were ₦295,000, ₦350,000 and ₦265,000 respectively. Cooperatives and mobile bankers had loans

request of ₦200,000 and ₦120,000 respectively. The total amount of loan requested by the agripreneurial groups' in Aba North was ₦2,235,500.

Table 3: Average Amount of Loan Repaid by Agripreneurial Groups' in Aba North, Abia State

S/N	Sources of Loan	Loan Requested (₦)	Loan Received (₦)	Loan Re-paid (₦)
1.	Money Lenders	450,000	425,000	350,000
2.	ROSCA	350,000	350,000	350,000
3.	Family/Friends	145,500	110,000	80,000
4.	Microfinance Banks	295,000	260,000	210,000
5.	Commercial Banks	350,000	275,000	195,500
6.	Self-help Group	265,000	265,000	200,000
7.	Cooperative Societies	200,000	200,000	200,000
8.	Savings collectors/Mobile bankers	120,000	110,000	110,000
9.	Others	60,000	50,000	40,000
	Total	**2,235,500**	**2,045,000**	**1,735,500**

* = Multiple responses recorded. Exchange rate @ ₦369.85 to $1.00
Source: Computed from field survey data, 2018

The volume of loan repaid by the agripreneurial groups' was also presented in Table 3 column 5; from the Table, it was observed that ₦350,000 was repaid by the respondents who received ₦425,000 from money lenders. A total of ₦350,000 was requested and received by the agripreneurial groups' who were involved with ROSCA. ROSCA and Cooperative society were the most transparent financial institution as of the time of this research. This is because, the amount of loan requested was equaled to the amount of loans received by the borrowers. Generally, the total amount of loan received by the agripreneurial groups' was ₦2,045,000 as against ₦1,735,500 which was repaid. The difference in the amount of loan received and repaid was ₦309,500. This result infers that the total amount of loan received by the agripreneurial groups' was not the total amount repaid.

Table 4 shows the loan repayment status of the agripreneurial groups' in the study area. The figures in parentheses represent percentage measure. Multiple responses were recorded as most of the respondents borrowed funds from two or three credit institutions. It is worthy to note that the agripreneurial groups' who repaid their loans as at when due or within one month after the due date were referred to as good credit risks. On the other hand, some agripreneurial borrowers repaid their loans with arrears, that is, payment of their loans took place within three months after the due date. Such borrowers were classified as delinquents;

while those who did not repay their loans at least 90 days after the due date were regarded as defaulters.

Table 4: Loan Repayment Status of Agripreneurial Groups' in Aba North, Abia State

S/N	Source of Loan Borrowed	Number of Participant*	Good Credit Risks	Delinquents	Defaulters
1.	Money Lenders	31 (38.75%)	12 (15.00%)	16 (20.00%)	3 (3.75%)
2.	ROSCA	26 (32.50%)	14 (17.50%)	5 (6.25%)	7 (8.75%)
3.	Family/Friends	73 (91.25%)	27 (33.75%)	15 (18.75%)	31 (38.75%)
4.	Microfinance Banks	45 (56.25%)	14 (17.50%)	13 (16.25%)	18 (22.50%)
5.	Commercial Banks	38 (47.50%)	13 (16.25%)	9 (11.25%)	16 (20.00%)
6.	Self-help Group	33 (41.25%)	16 (20.00%)	6 (7.50%)	11 (13.75%)
7.	Cooperative Societies	42 (52.50%)	19 (23.75%)	14 (17.50%)	9 (11.25%)
8.	Mobile bankers	44 (55.00%)	24 (30.00%)	8 (10.00%)	12 (15.00%)
9.	Others	13 (16.25%)	6 (7.50%)	3 (3.75%)	4 (5.00%)
	Total		**145**	**89**	**111**

* = Multiple responses recorded.
Source: Computed from field survey data, 2018

About 91.25% of the agripreneurs obtains financial assistance from family and friends; whereas 56.25% obtain their financial aid from microfinance banks; however 55% obtain their loans from mobile bankers. The loan repayment status of the agripreneurial groups' shows that on a total of 145 occasions, the agripreneurs were classified as good credit risk; i.e. they repaid their loans as at when due or within one month of their due time. On 89 and 111 occasions, the respondents were regarded as delinquents and defaulters. This result implies that majority of the agripreneurs in the study area were regarded as good credit risk.

A similar study by Abbink et al., (2006) effectively captures the idea that group lending is heavily dependent on dynamic incentives. This is because agripreneurial groups' have an incentive to repay group loans if they believe a percentage of other group members will do the same. That belief that other members will contribute in the current round is partially a function of the social capital that exists within the borrowing group, which may be a product of a borrowing group member's generalized trust in her society as a whole (according to Abbink et al., 2006).

Binary logistic regression showing the factors affecting agripreneurial groups' loan repayment was presented in Table 5. From Table 5, the coefficient of the likelihood ratio of Chi-square was 31.76, which was significant at 1% level; indicating a good fit for the estimated logistic model. The constant term (β0) was negative and statistically significant at 5% level with an odd ratio of -2.05. This implies that repayment capacity (credit/loan repaid on time) will decrease by 2.05 assuming other explanatory variables were held constant.

Table 5: Logistic Regression showing the Factors Affecting Agripreneurial Groups' Loan Repayment Capacity in Aba North, Abia State, Nigeria

Variable	Odd Ratio	95% Confident Interval	P – Value
(X_1) Income per group	1.08	0.22-1.56	0.137
(X_2) Trust	2.04	0.98 -1.08	0.029*
(X_3) Off-farm Employment	0.63	0.91-1.12	0.348
(X_4) Asset	3.21	2.44-3.67	0.035*
(X_5) Interest rate charge on loan	-4.05	2.99-3.08	0.002**
(X_6) Loan Duration	3.94	0.98-1.07	0.007**
(X_7) Political party affiliation	1.33	0.77-1.14	0.451
(β_0) Constant	-2.05	1.47-2.03	0.048*
Pseudo R-square	0.582		
Chi square	31.76***		0.001

Legend: ** Significance at 1% level; * Significance at 5% level.
Source: Field Survey Data, 2018.

The pseudo R2 or the measure of goodness of fit is used to judge the explanatory power of the independent variables on the endogenous variable (loan repayment capacity). The pseudo R2 denotes the percentage of variations in the dependent variable accounted for by the variations in the independent variables. Thus, the higher the pseudo R2, the more the model is able to explain the changes in the dependent variable due to changes in the independent variables. The logit model has a pseudo R2 of 0.505, implying that 50.5% of the variation in the dependent variable (loan repayment capacity) was explained by the exogenous variables (X1-X7). This result suggests that the explanatory variables had a significant influence on group loan repayment of the agripreneurs in the study area. The result shows that trust (X2), assets (X4), interest rate (X5) and loan duration (X6) were the significant variables influencing agripreneurial groups' loan repayment capacity in Aba North, Abia State, Nigeria.

Membership trust was significant at 5% level with a positive odds ratio of 2.04. This implies that loan repayment will increases as the members of the group have higher level of trust within themselves. This result implies that if the membership trust is increased by 1 unit, loan repayment capacity will increase by 2.04 units.

Similarly, asset of the members in the group was positive with an odd ratio of 3.21. The result is statistically significant at 5%. This infers that loan repayment will rise if the level of the agripreneurial groups' assets is increased. This shows that if the group assets were increased by 1 unit, loan repayment capacity will rise by 3.21 units.

Result from Table 5 shows that interest rate charged on loan was significant at 1% level; with a negative odds ratio of -4.05. This implies that the loan repayment capacity of the agripreneurs will decrease as the interest charged on the borrowed loan increases. This implies that, if the interest charged on loan is increased by 1 unit, loan repayment capacity will decrease by 4.05 units. This result is in conformity to the findings of Oladeebo and Oladeebo (2008) in their study entitled "Determinants of loan repayment among small-holder farmers in Ogbomoso agricultural zone of Oyo state, Nigeria.

In the same strain, loan duration period was significant at 1% level; with a positive odd ratio of 3.94. This implies that loan repayment will increase as the loan duration rises. This suggests that if the loan duration was increased by 1 unit, loan repayment capacity of the agripreneurial groups' will rise by 3.94 units; assuming other factors not included in the logit model were held constant.

Table 6: Multiple Regression Coefficients showing the Influence of Social Capital on Agripreneurial Groups' in Aba North, Abia State, Nigeria

Variables	Coefficient	Standard error	t – ratio	p-value
(β_0) Constant	-5.8422	3.3091	-1.7655*	0.037
(X_1) Age of Group head	2.7656	6.3199	0.4376	0.276
(X_2) Sex of Group head	0.1137	0.1678	0.6775	0.458
(X_3) Years of Education of Group head	3.3239	1.9865	1.6732*	0.048
(X_4) Interest rate charge on loan (%)	0.7661	0.7601	1.0078	0.387
(X_5) Loan Duration (months)	2.6294	0.2442	10.7674**	0.001
(X_6) Trust (Trust = 1, Otherwise = 0))	1.6175	17.5471	0.0921	0.126
(X_7) Density of Membership Index	1.5092	0.8061	1.8722*	0.028
(X_8) Cash Index of Group	1.8036	0.1934	9.3257**	0.005
(X_9) Labour Contribution Index	0.6972	0.6463	1.0787	0.587
(X_{10}) Decision Making Index	1.5541	2.6868	0.5784	0.318
(X_{11}) Meeting Attendance Index	0.4321	0.2567	1.6832*	0.027
(X_{12}) Heterogeneity Index of Association	0.7128	0.6919	1.0302	0.767
R	**0.649**			
R^2	**0.421**	**0.001**		
F – Statistics	**28.44*** **			

Legend: ** Significance at 1%, * Significance at 5%: *Source: Field Survey Data, 2018.*

The multiple regression coefficients showing the influence of social capital on group loan repayment among the agripreneurial groups' in the study area was presented in Table 6. The regression model has a multiple determination (R2) value of 0.421, implying that 42.1% of the variation in the dependent variable (agripreneurial group loan repayment capacity) was explained by the various exogenous variables (X1-X12). This suggests that the exogenous variables had a significant influence on group loan repayment capacity among the sampled agripreneurial groups' in Aba North, Abia State. The F-ratio was 28.44 and statistically significant at 1% level;

which implies that the model has a good fit. The constant term (β0) was negative and statistically significant at 5% level with a coefficient of -5.8422. This implies that the group loan repayment capacity will decrease by ₦584.22 assuming other explanatory variables were held constant.

From Table 6, it was observed that five out of the twelve exogenous variables employed in the model statistically influence group loan repayment capacity among the agripreneurs in the study area. The significant variables were years of education (X3), loan duration (X5), density of membership index (X7), cash contribution index of group (X8) and meeting attendance index (X11).

Years of education was statistically significant at 5% level; with a positive coefficient of 3.3239; indicating that the group loan repayment capacity among the entrepreneurs will increases as their years of education rises. This result connotes that an increase in the educational level of the group head, will invariable increase the group loan repayment capacity by ₦332.39.

The loan duration in months was positive and statistically significant at 99% level of confidence; with a coefficient of 2.6294; inferring that the agripreneurial group loan repayment capacity will increases as the loan duration increases. The result suggests that an increase in loan duration of the group will unwaveringly increase their loan repayment capacity by ₦262.94.

The fundamental function attributed to social capital is the ability of people to 'group' together in order to obtain some collective benefit. The density of membership is a complete inventory of all associations/groups in which the entrepreneurs belongs. The density of membership index was captured by the summation of the total number of associations to which each agripreneurs belongs. Density of membership index of the entrepreneur was positive and statistically significant at 5% level; with a coefficient of 1.5092. This implies that a unit increase in membership index of the agripreneurs, their loan repayment capacity by ₦150.92. The result suggests that, the higher the memberships index of the agripreneurs, the greater their loan repayment capacity. Olomola (2008) stated that the nature of membership in social organizations is crucial for improved performance of groups not only in terms of homogeneity but also in terms of inherent social capital which can be of great benefit to both lenders and borrowers.

Cash contribution index was achieved by taking records of payment of membership dues and other contributions by the agripreneurs in their various groups. Cash contribution index of the entrepreneur was positive and statistically significant at 1% level; with a coefficient of 1.8036. This implies that a unit increase in cash contributed by the various entrepreneurs' in their groups will result in ₦180.36 rise in their loan repayment capacity. The result suggests that the higher the cash

contributions index of the agripreneurs in their respective groups/association, the higher their loan repayment capacity.

Meeting attendance significantly affected the group loan repayment capacity in the study area. Meeting attendance index is the number of times the agripreneurs belonging to their various groups met over a period of time. It is simply the summation of attendances of the entrepreneurs at meetings. The meeting attendance index of the group was positive and statistically significant at 5% level with a coefficient of 0.4321. This implies that a unit increase in meeting attendance among the entrepreneurs in their groups will increase their loan repayment capacity by ₦43.21. This result infers that the higher the meeting attendance of the entrepreneurs, the greater their loan repayment capacity.

Ajani and Tijani (2009) and Lawal et al., (2009) observed that factors such as heterogeneity, meeting attendance, cash contributions and decision making indices as the social capital factors that positively influenced the probability of farmers' access to credit from financial institutions in Nigeria. Correspondingly, Armendariz and Morduch (2005) noted that the success of group lending approach in accessing credit/loan and lowering default rates relies heavily on social capital.

5. Conclusion and Recommendation:

Greater percentage of the agripreneurs were male. Mainstream of them are in their active and productive age hence could form groups for easy access to credit and loan in their respective enterprises. The agripreneurial group' sourced their loans from money lenders, ROSCA (Rotating Savings and Credit Association), family and friends, microfinance banks, commercial banks, self-help group, cooperative societies and savings collectors/mobile bankers. The total amount of loan received by the agripreneurs was not the total amount repaid by the group agripreneurs. Majority of the agripreneurs in the study area were regarded as good credit risk. The major factors affecting the agripreneurial group loan repayment capacity was trust, assets, interest rate charged on loans and the loan duration. Agripreneurs should be encouraged to participate more actively in group activities, not just for what they can get but for what they can give; as effective participation in association's decision making facilitates efficient access to productive resources like credit, labour among other resources.

References

Abbink, K., Irlenbusch, B. & Renner, E. (2006). Group size and social ties in microfinance institutions, *Economic Inquiry*, vol. 44(4), pp. 614–28.

Ado, S. G. (2017). Agriculture: Panacea for Nigeria's Economic Recession. Invited Paper presented at the 22nd Amah Convention held at Sultan Muhammad Macedon Institute for Qur'an and General Studies, Soot, April 15-17, 2017, 30 pp.

Agbemava, E., Nyarko, I. K., Adade, T. C. & Bediako, A. K. (2016). Logistic Regression Analysis Of Predictors Of Loan Defaults By Customers Of Non-Traditional Banks In Ghana. *European Scientific Journal.* Vol.12 (1), Pp 175-189.

Ajani, O. I. Y & Tijani, G. A (2009). The role of Social Capital in Access to Micro Credit in Ekiti State, Nigeria, *Pakistan Journal of Social Sciences* vol 6(3), pg 125-132.

Armendariz de, A. B. & Morduch, J. (2005). The Economics of Microfinance, *Cambrdge MA: MIT press*.

Guttman M. J. (2007). Repayment Performance in Microcredit Programs: Theory and Evidence, Working Paper-11, Networks Financial Institute, Indiana State University.

Kanu, I. M. (2020). Analysis of cocoa farmer's poverty status in Abia State, Nigeria: The Foster, Greer and Thorbeck (FGT) decomposable poverty measure. *International Journal of Agriculture, Environment and Food Sciences*, Vol. 4 (2), Page 188-199.

Kanu, I. M. & Nwaru, J. C. (2020). Analysis of Resource Use Efficiency and Elasticity of Production among Smallholder Broiler Producers in Ikwuano Local Government Area of Abia State, Nigeria. *International Journal of Agriculture, Environment and Food Sciences*, Vol. 4 (4), Page 432-438.

Karlan, D. (2006). Social Connections and Group Banking. Economic Growth Center, Yale University New Haven, CT 06520.

Lawal, J. O, Omonona, B. T, Ajani, O. I. Y & Oni, O. A (2009). Effects of Social Capital on Access to Credit among Cocoa Farming Households in Osun State, Nigeria, *Agricultural Journal* vol. 4 (4), pg 184-191.

Okezie C. R., Kanu I. M. & Nwosu R. O. (2020). Effect of social capital on private adaptation measures to climate change among farmers in Ezinihitte Mbaise, Imo State, Nigeria. *International Journal of Agriculture, Forestry and Life Sciences*, Vol 4 (2): Page 303-310.

Oladeebo J. O. & Oladeebo O. E.(2008) Determinants of Loan Repayment among Smallholder Farmers in Ogbomoso Agricultural zone of Oyo State, Nigeria. *Journal of Social Science*, vol 17(1): pg 59-62.

Olomola, A. S. (2008). Social Capital, Microfinance Group Performance and Poverty Implications in Nigeria. Nigeria Institute of Social and Economic Research (NISER) Ibadan.

Uche, C. & Familusi, L. C. (2018). The Adoption of Agripreneurship as a Mitigating Measure to Unemployment in Nigeria: A Topical Review. *Global Journal of Management and Business Research*. Volume 18 Issue 2 Version 1.0. Pp 24-31.

Yusuf, S. A. (2008). Social capital and households' welfare in Kwara State, Nigeria. *Journal of Human Ecology*, Vol. 23, pg 219–229.

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The Purpose-Spesific Structure of Decree on State Aids for Investments: A Comparision of Regions Classified as Socioeconomic Development Level via COPRAS Method

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The Purpose-Spesific Structure of Decree on State Aids for Investments: A Comparision of Regions Classified as Socioeconomic Development Level via COPRAS Method

Abstract

With the Decree No. 15199 on State Aids for Investments, which entered into force in 2009, the investment incentive system was provided with a legal basis based on categorization, which was created on the basis of different purposes included in the development plans. This decree, unlike the previous regulations, has a context that is organized according to spesific purposes. In this study, it is aimed to comparatively reveal the realization level of the structure of the Decree on State Aids for Investments, which is formed in line with the prioritized objectives, on the basis of socio-economic regions. In this direction, using the investment incentive data set and socioeconomic development level data for six regions for the period of 2009-2018, the usage levels of the types of incentives by regions were compared with COPRAS, which is a multi-criteria decision-making method. As a result, it was concluded that the ranking of the regions is as follows the third, the second, the first, the fourth, the fifth and the sixth, respectively, for using of incentives according to the the purpose of the decree. Thus, it has been determined that the realization level of the decree is higher in regions with a good socio-economic development level compared to other regions.

Yatırımlarda Devlet Yardımları Hakkında Kararın Amaç Spesifik Yapısı: Sosyo-Ekonomik Gelişmişlik Düzeyine göre Bölgeler Bazında COPRAS Yöntemi ile Karşılaştırma

Öz

2009 yılında yürürlüğe giren 15199 sayılı Yatırımlarda Devlet Yardımları Hakkında Karar ile yatırım teşvik sistemine, kalkınma planlarında yer alan farklı amaçlar temelinde oluşturulan kategorizasyon esaslı yasal bir zemin sağlanmıştır. Bu karar önceki düzenlemelerden farklı olarak, yapısı itibariyle belirli amaçlara göre düzenlenmiş bir bağlama sahiptir. Bu çalışmada da Yatırımlarda Devlet Yardımları Hakkında Kararın önceliklendirilmiş amaçlar doğrultusunda oluşturulan yapısının uygulamada gerçekleşme düzeyini sosyo-ekonomik bölgeler bazında karşılaştırmalı olarak ortaya koymak amaçlanmaktadır. Bu doğrultuda altı bölge için, 2009-2018 dönemi yatırım teşvik veri seti ve sosyoekonomik gelişmişlik düzeyi verileri kullanılarak bölgeler itibariyle teşvik türlerinin kullanım düzeyleri, çok kriterli karar verme yöntemi olan COPRAS ile karşılaştırmalı olarak incelenmiştir. Sonuçta kararın amacına uygun teşvik kullanımında üçüncü bölge ilk sırada yer alırken; sırasıyla ikinci, birinci, dördüncü, beşinci ve altıncı bölgelerin bulunduğu sonucuna ulaşılmıştır. Böylelikle sosyo-ekonomik gelişmişlik düzeyi iyi olan bölgelerde, kararın gerçekleşme düzeyinin diğer bölgelere göre yüksek olduğu saptanmıştır.

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1. Giriş

Türkiye'de teşvik sisteminin gelişimi ülkenin kuruluşundan itibaren ekonomi politikalarında ortaya çıkan değişim ve dönüşümler ile bağlantılı olarak gerçekleşmiştir. Bu kapsamda Keynesyen refah ekonomilerinin uygulandığı süreçte maliye politikaları müdahaleci nitelikte iken, Keynesyen refah ekonomilerinin yerini para politikalarına bırakmasıyla maliye politikalarının müdahalecilik rolünde de kısıtlama ortaya çıkmıştır. Bu süreçte aktif maliye politikaları yerini düzenleyici maliye politikalarına bırakmıştır. Böylelikle yatırımlar başta olmak üzere diğer harcama kalemlerinde de, devlet harcamayı doğrudan yapmak yerine piyasa aktörleri tarafından söz konusu harcamaların yapılmasını destekleyen konumuna geçmiştir. Bu konjonktürde de mali teşvikler, devletin temel maliye politikası aracı haline gelmiştir.

Mali teşvikler literatürde farklı şekillerde kategorize edilmekle birlikte, gerek kalkınma planlarındaki plan ve hedefler gerekse Türkiye'nin gelişmekte olan ülkeler grubunda yer alması, Türkiye'deki bölgeler ve sektörler arası dengesizlikler göz önünde bulundurulduğunda, yatırımlara yönelik teşviklerin Türkiye ekonomisi açısından önemli kalkınma aracı olduğu kabul edilmektedir. Bu kapsamda da Türkiye'de yatırımların desteklenmesine yönelik 1913 Teşvik-i Sanayi Kanuna kadar uzanan, özel sektör ağırlıklı kalkınma modelinin benimsenerek, özel sektör yatırımlarının teşvik edilmesi şeklindeki karar ile 1923 Birinci İzmir İktisat Kongresi ile devam eden tarihsel bir süreç bulunmaktadır. Bu süreçte yatırım teşviklerine yönelik uygulamaların sistemli bir hal alması ise planlı kalkınma dönemine geçiş ile başlamıştır (Ersan ve Buyrukoğlu, 2015, s:36). Planlı kalkınma dönemi ile birlikte Yatırım Teşvik Sistemi dahilinde dönemsel hedef ve planlar doğrultusunda pek çok farklı amaç dahilinde düzenlemeler yapılmıştır. Bu kapsamda özellikle 1980 sonrasında dış ticaret stratejilerinin değiştirilmesiyle teşvik sisteminde önemli değişiklikler gerçekleştirilmiştir. Yatırımlara yönelik olarak ise ağırlıklı olarak sektörel farklılık temelinde oluşturulan yapı, 4 Nisan 1995 Tarih ve 22248 Sayılı Resmi Gazete'de yayınlanan Yatırımlarda Devlet Yardımları ile ilgili 95/2 Sayılı Tebliğ ve 2004 yılında yürürlüğe giren 5084 sayılı "Yatırımların ve İstihdamın Teşviki ile Bazı Kanunlarda Değişiklik Yapılması Hakkında Kanun" ile yerini bölgesel farklılık esasına bırakmıştır (Eser, 2011, s:132). 2009 yılında yürürlüğe giren 15199 sayılı Yatırımlarda Devlet Yardımları Hakkında Karar ise geçmiş dönemdeki bu kararların önceliklerini kapsayacak ve çeşitlendirecek bir amaç ile oluşturulmuştur. Bu doğrultuda planlı kalkınma dönemi ile sistematik hale gelen Yatırım Teşvik Sistemi, 2009 yılı itibariyle de farklı öncelikleri bütünleştirecek bir hale dönüşmüştür.

Bu çalışma kapsamında da Yatırım Teşvik Sisteminin 2009 yılı itibariyle benimsediği farklı önceliklerden oluşan yapının, uygulamadaki gerçekleşme düzeyinin ortaya koyulması amaçlanmaktadır. Bu doğrultuda Türkiye'de yatırım teşvik sistemi ile ilgili literatür incelendiğinde ampirik çalışmaların sınırlı düzeyde bulunduğu görülmektedir. Literatürdeki ampirik çalışmaların bir kısmında (Akan ve Arslan, 2008; Ay, 2005; Erden ve Karaçay-Çakmak, 2005; Karaçay-Çakmak ve Erden, 2004)

yatırım teşviklerinin yatırım ve istihdam temelli makro ekonomik politikalar bağlamında ele alındığı görülmektedir. Son dönem yapılan çalışmalarda ise yatırım teşviklerinin mekânsal bağlamı incelenmiştir. Buna göre gerek Tezel (2014) tarafından 1980-2010 dönemi için gerekse Üzümcü vd. (2018) tarafından 2010-2017 dönemi için teşviklerin mekânsal dağılımının incelendiği çalışmalarda, teşviklerin dağılımının farklılık gösterdiği ve gelişmiş bölgelerin teşviklerden daha çok yararlandığı sonucuna ulaşılmıştır. Bu sonuçlar bütün teşvik türlerinin tamamını kapsamakla birlikte, özellikle bölgesel dengesizliklerin giderilmesi doğrultusunda oluşturulan bölgesel yatırımlara yönelik teşviklerin 2009-2017 dönemi için mekânsal temelli analiz ile incelendiği Doğan (2018) tarafından yapılan çalışma ile de benzer sonuçlara ulaşılmıştır. Teşviklerin dağılımının incelendiği bu çalışmalardan farklı olarak Yavan (2012) tarafından yapılan çalışmada ise teşviklerin dağılımını belirleyen faktörler incelenmiştir. Türkiye'de iller bazında 2001-2008 dönemine ilişkin yapılan inceleme ile teşviklerin dağılımında ekonomik faktörlerin (gelir düzeyi, sanayi yatırımlarının seviyesi, dış ticarete açıklık derecesi) yanı sıra politik, küresel ve kurumsal faktörlerin (politik güç, iktidar partisinin ideolojisi ve kalkınmada öncelikli yöre statüsüne sahiplik) belirleyici olduğu sonucuna ulaşılmıştır.

Literatürde yapılan çalışmalardan hareketle bu çalışmanın amacı da göz önünde bulundurulduğunda, Yatırım Teşvik Sisteminin 2009 yılında Yatırımlarda Devlet Yardımları Hakkında Karar ile geçirdiği dönüşümün etkisinin mekânsal bazda ortaya koyulması ile literatüre katkı sağlanması planlanmaktadır. Bu doğrultuda yatırımların mekânsal temelli dağılımının ötesine geçilerek, bu dağılımların teşvik türleri itibariyle içeriği de incelenmektedir. Böylelikle söz konusu mekânsal dağılım aracılığıyla, 2009/15199 sayılı kararın oluşturduğu dönüşümün etkisi çok kriterli karar verme yöntemi kullanılarak mekânsal bazda değerlendirilmektedir. Bu kapsamda ilk olarak Yatırımlarda Devlet Yardımları Hakkında Karar'ın genel yapısının ortaya koyulmasına yönelik bir değerlendirme yapılmaktadır. Yapılan bu değerlendirmeden hareketle 2009-2018 dönemi itibariyle Türkiye'deki sosyo-ekonomik gelişmişlik seviyesine göre altı bölgenin karşılaştırmalı olarak incelenmesine imkan tanıyan ampirik değerlendirme sunulmaktadır.

2. Yatırımlarda Devlet Yardımları Hakkında Karara Yönelik Değerlendirme

Yatırımlarda Devlet Yardımları Hakkında Karar, Türkiye'deki yatırım teşvik sisteminin yapısındaki dönüşümü ortaya koyan temel düzenleme niteliğindedir. Bu düzenleme ile yatırım teşvik sisteminin yapısı bütünüyle amaç spesifik bir yapıya dönüşmüştür. Buna göre karar öncesi dönemde, yatırım teşvik sistemi kalkınmada öncelikli yörelerin desteklenmesi şeklinde bölgesel nitelikli, teknolojik gelişim ve araştırma geliştirmenin desteklenmesi şeklinde ise inovasyon nitelikli kalkınma

planlarındaki hedef ve politikalar ile uyumlu belirli amaçları kapsamıştır. Teşvik sistemi kapsamında da söz konusu amaçlara yönelik bağımsız yasal düzenlemeler oluşturulmuştur. Bu durum ise teşvik sisteminde birçok düzenlemenin oluşumuna ve mevcut düzenlemelerde de sürekli güncellenme ve değişiklik ihtiyacına yol açmıştır.

2009 yılında yürürlüğe giren 15199 sayılı Yatırımlarda Devlet Yardımları Hakkında Karar ile yatırım teşvik sistemine, kalkınma planlarında yer alan farklı amaçlar temelinde oluşturulan kategorizasyon esaslı yasal bir zemin sağlanmıştır. Bu karar önceki düzenlemelerden farklı olarak, yapısı itibariyle belirli amaçlara göre düzenlenmiş bir bağlama sahiptir. Dolayısıyla kararda, kalkınma planlarındaki farklı alanlardaki hedeflerin yatırım boyutları kategorize edilerek içerilmektedir. Buna bağlı olarak da kalkınma planlarındaki ilgili hedefler karar kapsamında her bir kategoriye ilişkin amaca dönüşmektedir. Nitekim bu durum "Bu Kararın amacı, Kalkınma Planları ve Yıllık Programlarda öngörülen hedefler ile uluslararası anlaşmalara uygun olarak, tasarrufları katma değeri yüksek yatırımlara yönlendirmek, üretimi ve istihdamı artırmak, yatırım eğiliminin devamlılığını ve sürdürülebilir kalkınmayı sağlamak, uluslararası rekabet gücünü artıracak teknoloji ve araştırma-geliştirme içeriği yüksek büyük ölçekli yatırımları özendirmek, doğrudan yabancı yatırımları artırmak, bölgesel gelişmişlik farklılıklarını gidermek, çevre korumaya yönelik yatırımlar ile araştırma ve geliştirme faaliyetlerini desteklemektir" şeklindeki kararın birinci maddesinde de açıkça görülmektedir. Kararın amaç maddesi incelendiğinde, kalkınmaya yönelik genel nitelikli amaçların yanı sıra, teknoloji ve araştırma-geliştirmeye yönelik büyük ölçekli ve bölgesel gelişmişlik farklılıklarını gidermeye yönelik bölgesel yatırımlar şeklinde kategorize edilmiş iki temel amacın içerildiği görülmektedir. Böylelikle teşvik sistemi kapsamında 2009 yılı öncesindeki spesifik amaçlara ilişkin oluşturulan ayrı düzenlemeler yerine, 2009 yılı ile söz konusu spesifik amaçları da içeren bütünlüklü bir düzenleme yürürlüğe girmiştir.

2009/15199 sayılı karar, 2012 yılında 3305 sayılı Yatırımlarda Devlet Yardımları Hakkında Kararın yürürlüğe girmesi ile yürürlükten kaldırılmıştır. 2009/15199 sayılı karar ile aynı içeriğe sahip olan bu kararın temel farklılığı, amacın spesifik yapısındaki artıştır. Bu karar ile teşvik sistemi kapsamında bölgesel yatırımlar ile stratejik yatırımlar şeklinde iki spesifik yatırım bağlamı daha oluşturulmuştur. Bu doğrultuda kararın amacı "kalkınma planları ve yıllık programlarda öngörülen hedefler doğrultusunda tasarrufların katma değeri yüksek yatırımlara yönlendirilmesine, üretim ve istihdamın artırılmasına, uluslararası rekabet gücünü artıracak ve araştırma- geliştirme içeriği yüksek bölgesel ve büyük ölçekli yatırımlar ile stratejik yatırımların özendirilmesine, uluslararası doğrudan yatırımların artırılmasına, bölgesel gelişmişlik farklılıklarının azaltılmasına, kümelenme ve çevre korumaya yönelik yatırımlar ile araştırma ve geliştirme faaliyetlerinin desteklenmesine ilişkin usul ve esasları belirlemektir" şeklinde güncellenmiştir. Kararda "asgari sabit yatırım tutarı üçmilyar Türk Lirasının üzerinde olan öncelikli yatırımlar" şeklinde tanımlanan stratejik yatırımlar, belirli sektörler itibariyle

yurtiçinde üretim artışı sağlanması amacı doğrultusunda, bu karar ile teşvik sistemi kapsamına girmiştir. Bununla birlikte önceki kararda her ne kadar bölgesel dengesizliklerin giderilmesi amaç kapsamında yer alsa da, spesifik olarak bölgesel yatırımlar kategorisinin belirlenmesi de bu karar ile gerçekleşmiştir. Bölgesel teşvikler oluşum gerekçesi itibariyle bölgesel ayrım esasına dayanmakla birlikte, bu ayrım sadece bölgesel teşvikler ile sınırlı kalmayarak diğer amaç spesifik teşvikler için de kriter niteliği kazanmıştır. Bu doğrultuda bölgesel teşviklerin uygulanmasına esas oluşturan ve diğer teşvikler için de kriter niteliğindeki bölgeler, kararın önemli bir unsuru haline gelmiştir.

Karar kapsamındaki bölge içeriği, sosyo-ekonomik gelişmişlik düzeyine göre Türkiye'deki 81 ilin sınıflandırılmasıyla oluşan altı kademenin karşılığıdır. Bu sınıflandırma ise bölgesel gelişme politikalarının izleme ve değerlendirme araçlarından birisi olarak öne çıkan Sosyo-Ekonomik Gelişmişlik Sıralaması (SEGE) Araştırmaları kapsamında yer almaktadır. Bu araştırmalardan sonuncusu SEGE-2017 raporu olmuştur. Raporda demografi, istihdam, eğitim, sağlık, rekabetçi ve yenilikçi kapasite, mali erişilebilirlik, yaşam kalitesi değişkenleri seklindeki sekiz ana kategori kapsamında toplam 52 değişken kullanılmıştır. Bu kapsamda oluşturulan sınıflandırma ile birinci kademe sosyo-ekonomik gelişmişlik düzeyi en iyi olan illerden, altıncı kademe ise en kötü olan illerden oluşmaktadır. Bu sınıflandırmayı esas alan 2012/3305 sayılı Karar, destek unsurları itibariyle incelendiğinde de söz konusu sınıflandırmanın önemi açıklıkla görülmektedir.

Tablo 1: 2012/3305 sayılı Karar Kapsamında Teşvik Türlerine göre Teşvik Unsurları

Teşvik Türleri	Teşvik Unsurları
Genel Teşvik Uygulamaları	a) Gümrük vergisi muafiyeti. b) Katma Değer Vergisi (KDV) istisnası. c) Gelir vergisi stopajı desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için). ç) Sigorta primi işveren hissesi desteği (tersanelerin gemi inşa yatırımları için).
Bölgesel Teşvik Uygulamaları	a) Gümrük vergisi muafiyeti. b) KDV istisnası. c) Vergi indirimi. ç) Sigorta primi işveren hissesi desteği. d) Yatırım yeri tahsisi. e) Faiz desteği (3 üncü, 4 üncü, 5 inci ve 6 ncı bölgelerdeki yatırımlar için). f) Gelir vergisi stopajı desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için).

	g) Sigorta primi desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için).
Büyük Ölçekli Yatırımlar	a) Gümrük vergisi muafiyeti. b) KDV istisnası. c) Vergi indirimi. ç) Sigorta primi işveren hissesi desteği. d) Yatırım yeri tahsisi. e) Gelir vergisi stopajı desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için). f) Sigorta primi desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için).
Stratejik Yatırımlar	a) Gümrük vergisi muafiyeti b) KDV istisnası. c) Vergi indirimi. ç) Sigorta primi işveren hissesi desteği. d) Yatırım yeri tahsisi. e) Faiz desteği. f) KDV iadesi. g) Gelir vergisi stopajı desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için). ğ) Sigorta primi desteği (6 ncı bölgede gerçekleştirilecek yatırımlar için).

Karara göre destek unsuru bağlamında bölge ayrımı, dört teşvik uygulamasının tamamında bulunmaktadır. Bununla birlikte destek unsurları itibariyle bölge ayrımı, bölgesel teşvik uygulamaları ile büyük ölçekli yatırımlarda belirleyici bir niteliğe sahip ve önemli ölçüde benzerlik gösterirken, genel teşvik uygulamaları ile stratejik yatırımlar dahilinde bölge farkı temel belirleyen niteliğinde değildir. Bu kapsam dahilinde teşvik türleri arasında teşvik unsuru çeşitliliği, teşvik türü itibariyle en fazla stratejik yatırımlar kapsamında yer alırken, bölge itibariyle de en fazla altıncı bölgede bulunmaktadır. Ayrıca kararın ekleri incelendiğinde, teşvik unsurlarından yararlanabilmek için gerekli asgari yatırım tutarı ile yararlanma süreleri açısından da stratejik yatırımlar ile altıncı bölgenin daha avantajlı olduğu görülmektedir[1].

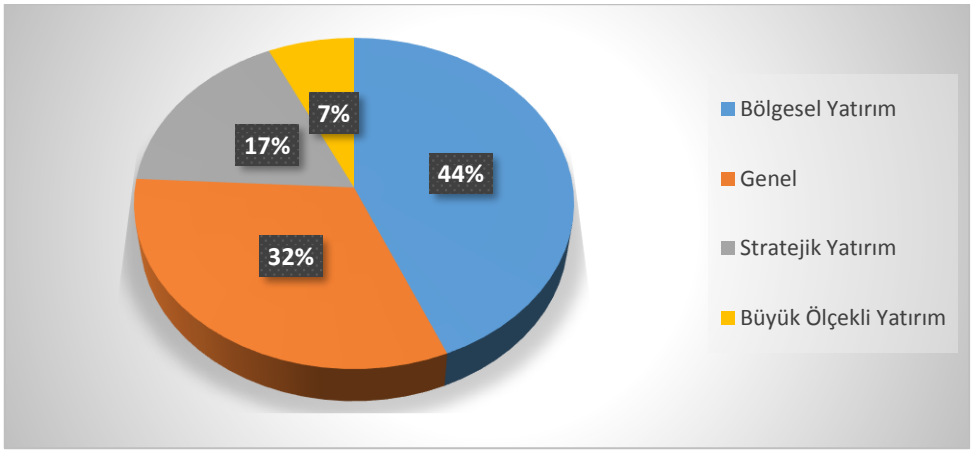
Diğer taraftan 2012/3305 sayılı kararda, yürürlüğe girdiği tarihten bu yana toplam 27 adet değişiklik yapılmıştır. Bu değişikliklerden 06.08.2019 tarih ve 1402 sayılı düzenleme ile kararın amacı değiştirilerek büyük ölçekli yatırımlar çıkarılmıştır. Böylelikle kararın amacı; "kalkınma planları ve yıllık programlarda öngörülen hedefler doğrultusunda tasarrufların katma değeri yüksek yatırımlara yönlendirilmesine, üretim ve istihdamın artırılmasına, uluslararası rekabet gücünü artıracak ve araştırma- geliştirme içeriği yüksek bölgesel yatırımlar ile stratejik yatırımların özendirilmesine, uluslararası doğrudan yatırımların artırılmasına, bölgesel gelişmişlik farklılıklarının azaltılmasına, kümelenme ve çevre korumaya

[1] Detaylı bilgi için bakınız Sanayi ve Teknoloji Bakanlığı Yatırım Teşvik Uygulamaları, Ocak 2021.

yönelik yatırımlar ile araştırma ve geliştirme faaliyetlerinin desteklenmesine ilişkin usul ve esasları belirlemektir" şeklini almıştır. Karar bu haliyle amaç spesifik yapısını korusa da, spesifik teşvik türlerinden bir kategori azalmıştır.

Bu çerçevede Yatırımlarda Devlet Yardımları Hakkında Karar ile yatırım teşvik sisteminin yasal bağlamda bütüncül hale gelen amaç spesifik yapısı, kararın geçirdiği düzenlemelere rağmen önemli ölçüde korunmuştur. Bununla birlikte yasal bağlamda oluşturulan amaç spesifik yapının, pratikte gerçekleşme düzeyi incelendiğinde ise bölge ayrımı yapılmaksızın ülke geneline ilişkin toplam veriler itibariyle büyük ölçüde gerçekleştiği görülmektedir (Şekil 1).

Şekil 1: Yatırım Teşvik Sistemi dahilinde Yapılan Yatırımların Teşvik Türleri itibariyle Oransal Dağılımı (2009-2018)

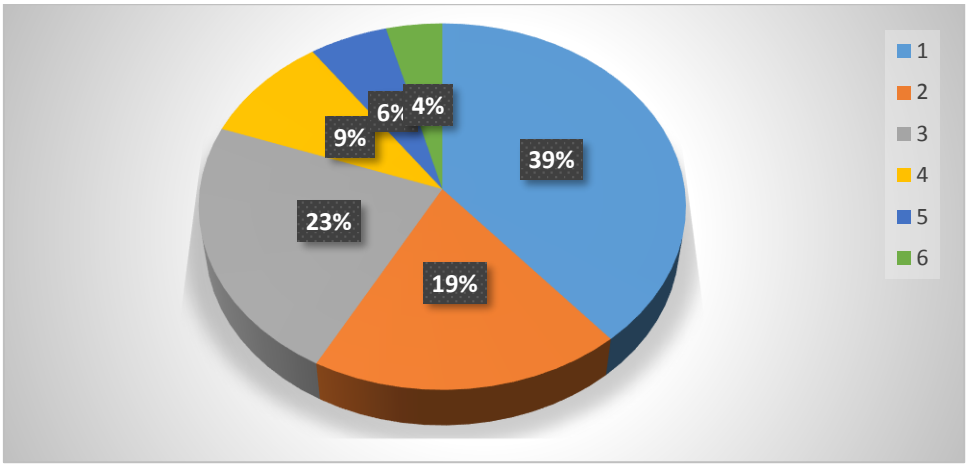


Kaynak: Sanayi ve Teknoloji Bakanlığı Yatırım Teşvik veri seti istatistikleri kullanılarak oluşturulmuştur.

Kararın yürürlüğe girdiği tarihten itibaren (2009 yılı) karardan büyük ölçekli yatırımların çıkarıldığı yıla kadar olan (2019 yılı) veriler incelendiğinde, yatırım teşvik sistemi dahilinde yapılan yatırımların dağılımın teşvik türleri itibariyle dengeli olmadığı söylenebilir. Bölgesel teşviklerin oranı (%44) diğerlerine göre belirgin ölçüde yüksek iken, stratejik yatırımlar ile büyük ölçekli yatırımlara yönelik teşvikler kapsamında yapılan toplam yatırım tutarı (%24) oldukça düşüktür. Bununla birlikte kararın amaç spesifik yapısının dışında yer alan genel teşvik uygulamalarının oranı (%32) ise oldukça yüksektir. Her ne kadar kararın dördüncü maddesinin altıncı fıkrası ile bölgesel teşvik uygulamaları, büyük ölçekli yatırımlar, stratejik yatırımlar kapsamında yer alabilecek yatırımların, talep edilmesi halinde genel teşvik uygulamaları kapsamında yer almasına imkan tanınsa da, Tablo 1 kapsamında sunulan teşvik unsurları göz önünde bulundurulduğunda, genel teşvik uygulamaları oranının yüksekliğinde bu tercihin etkisinin belirgin olmadığı düşünülmektedir.

Diğer taraftan Yatırımlarda Devlet Yardımları Hakkında Karar kapsamında önemli bir diğer husus olan teşviklerin uygulandığı bölgeler itibariyle, teşvik sitemi kapsamında yapılan yatırımlar bütün olarak ele alındığında da bölgeler arasında belirgin ölçüde dengesizlik olduğu görülmektedir (Şekil 2).

Şekil 2: Yatırım Teşvik Sistemi dahilinde Yapılan Yatırımların Bölgeler itibariyle Oransal Dağılımı (2009-2018)

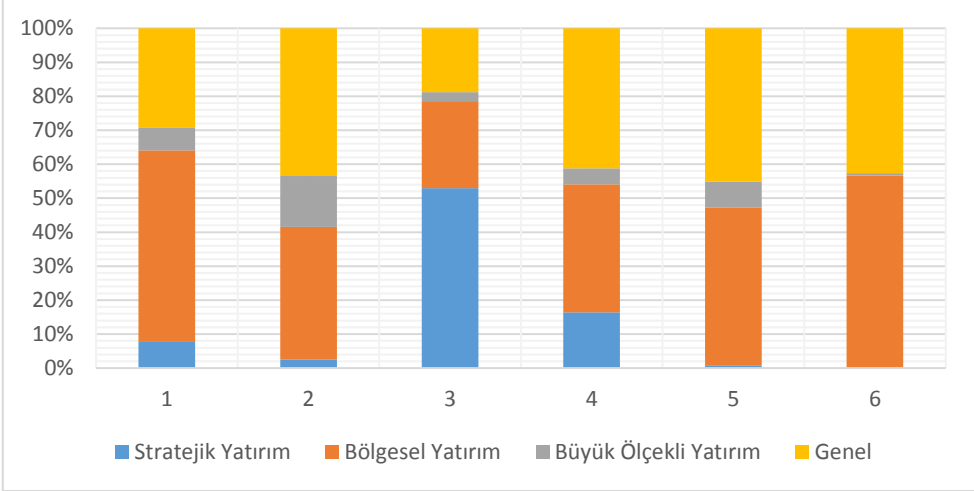


Kaynak: Sanayi ve Teknoloji Bakanlığı Yatırım Teşvik veri seti istatistikleri kullanılarak oluşturulmuştur.

2009-2018 dönemi itibariyle teşvik sistemi kapsamında yapılan toplam yatırımların büyük kısmı (%81) ilk üç bölgede yer alırken, diğer üç bölgede sadece %19'luk kısmı yer almaktadır. Üstelik bu dağılım, bölgelerin sosyo-ekonomik gelişmişlik düzeyi kötüleştikçe teşvik kapsamındaki yatırımdan aldıkları payın da düşmesi şeklindedir. Bu durum, Tablo 1 kapsamında değerlendirilen sosyo-ekonomik gelişmişlik düzeyi kötü olan bölgelerde teşvik unsurları hem çeşitlilik olarak hem de gerekli asgari koşullar ve yararlanma süreleri itibariyle daha avantajlı olmasına rağmen gerçekleşmiştir.

Şekil 2 kapsamında değerlendirilen teşvik sistemindeki yatırımların miktarının bölgeler itibariyle gösterdiği farklılık, teşvik türleri de dikkate alındığında Şekil 1 kapsamında ele alınan farklılıkların bölgeler düzeyinde değerlendirilmesine imkan sunmaktadır. Bu doğrultuda Şekil 1 ve Şekil 2 kapsamındaki değerlendirmelerin karşılaştırmalı olarak incelenebilmesi amacıyla bölgeler bazındaki yatırımların teşvik türleri itibariyle dağılımı sunulmaktadır (Şekil 3).

Şekil 3: Bölgeler bazında Yatırım Teşvik Sistemi dahilinde Yapılan Yatırımların Teşvik Türleri itibariyle Oransal Dağılımı (2009-2018)



Kaynak: Sanayi ve Teknoloji Bakanlığı Yatırım Teşvik veri seti istatistikleri kullanılarak oluşturulmuştur.

Bölgeler bazında teşvik türlerinin oransal dağılımına bakıldığında bölgeler arası belirgin farklılığın bulunduğu görülmektedir. Bölgesel yatırımlara yönelik teşvikler (%25 ile %57 aralığında) ile genel teşvikler (%19 ile %45 aralığında) bütün bölgelerde ağırlıklı paya sahip olmakla birlikte, bu ağırlığın oranı arasındaki farklılık da belirgin düzeydedir. Büyük ölçekli yatırımlara yönelik teşvikler ile stratejik yatırımlara yönelik teşviklerin ağırlığı üçüncü bölge dışında bütün bölgelerde en düşük düzeydeki ağırlığa sahiptir. Genel olarak bölgeler arasında belirgin farklılıklar bulunmakla birlikte özellikle üçüncü bölge diğer bölgelerden önemli ölçüde farklılaşmaktadır. Bu farklılık bir taraftan genel teşviklerin oranının en düşük (%19) diğer taraftan da stratejik yatırımlara yönelik teşvik oranının önemli ölçüdeki yüksekliğinden (%53) kaynaklanmaktadır. Dolayısıyla Şekil 1 kapsamında yapılan değerlendirmeler göz önünde bulundurulduğunda, toplam teşvikler kapsamı içindeki payı düşük olan (%17) stratejik yatırımlara yönelik teşviklerin önemli bir kısmının üçüncü bölgede bulunduğu görülmektedir.

Bu çerçevede Yatırımlarda Devlet Yardımları Hakkında Kararın uygulamadaki durumuna yönelik Şekil 1, Şekil 2 ve Şekil 3 kapsamında yapılan değerlendirmeler bütün olarak ele alındığında, kararın iki temel unsuru olan teşvik türleri ve bölgesel ayrım bazında ortaya çıkan dengesiz dağılımdan hareketle, kararın amacının uygulama aşamasında karşılığını bulamadığı söylenebilir. Bununla birlikte bu durum Şekil 3 aracılığıyla da sunulduğu gibi bölgeler itibariyle farklılık göstermekte olup, bu farklılığın düzeyi belirgin ölçüde farklılaşmaktadır. Buna bağlı olarak kararın amacının gerçekleşme düzeyi bağlamında bölgeler itibariyle bulunan farklılığın

düzeyinin ortaya koyulabilmesi amacıyla takip eden bölümde ampirik bir değerlendirme sunulmaktadır.

3. Ampirik Değerlendirme

Bu bölümde, Yatırımlarda Devlet Yardımları Hakkında Kararın amaç spesifik yapısının, sosyo-ekonomik gelişmişlik düzeyine göre bölgeler itibariyle gerçekleşme düzeyinin ortaya koyulabilmesi amacıyla ampirik bir değerlendirme yapılmaktadır. Bu doğrultuda ilk olarak teşvik türleri kategorize edilmekte, sonrasında ise inceleme dönemi belirlenmektedir. Buna göre stratejik yatırımlar, bölgesel teşvikler ve büyük ölçekli yatırımlar kararın amaç spesifik yapısı kapsamında yer alırken; genel teşvikler bu kapsam dahilinde yer almamaktadır. İnceleme dönemi ise kararın ilk yürürlük tarihi olan 2009 yılından büyük ölçekli yatırımların karar kapsamında çıkarıldığı 2019 yılına kadar olan süreyi, yani 2009-2018 dönemini kapsamaktadır.

Bu doğrultuda öncelikle araştırmanın kapsamı ve bu kapsam dahilinde uygulanan yöntem hakkında bilgi verilmekte, sonrasında ise elde edilen bulgular ortaya konularak bir değerlendirme yapılmaktadır.

3.1. Araştırmanın Kapsamı

Araştırma kapsamı, Türkiye'deki sosyo-ekonomik gelişmişlik seviyesine göre altı bölgenin 2009-2018 dönemi için teşvik türleri itibariyle Yatırım Teşvik Sistemi kapsamında yapılan yatırım tutarına ilişkin verilerden oluşturmaktadır. Bu kapsamda araştırmanın amacına uygun bir değerlendirme yapabilmek için Sanayi ve Teknoloji Bakanlığı 2021 yılı Teşvik veri seti istatistiklerinden yararlanılmıştır.

3.2. Araştırma Yöntemi

Karmaşık Nisbi Değerlendirme yöntemi yani COPRAS (Complex Proportional Assessment) 1996 yılında geliştirilen çok kriterli karar verme yöntemidir (Zavadskas ve Kaklauskas, 1996). Yöntem, kriter değerlerinin hem maksimize hem de minimize edilmesi esasına dayanan çok kriterli değerlendirmeye imkan tanımaktadır. Karmaşık süreçlerin değerlendirilmesine imkan tanıması nedeniyle yaygın olarak kullanılması tercih edilen yöntemde, maksimize ve minimize edilen kriterlerin değerlendirme sonuçları üzerindeki etkisi de ayrı ayrı görülebilmektedir. Bu açıdan benzer nitelikteki diğer çok kriterli karar verme yöntemlerinden ayrılmaktadır (Podvezko, 2011:138).

COPRAS yönteminin uygulanmasında 7 aşamalı bir süreç bulunmaktadır. Birinci aşamada x_{ij} değerlerinden oluşan karar matrisi oluşturulmaktadır.

Yöntemin ikinci aşamasında eşitlik 1 aracılığıyla karar matrisi, normalize matrise dönüştürülmektedir.

$$x_{ij}^{*} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}} \qquad \forall ij = 1,2, \dots, n \tag{1}$$

Yöntemin üçüncü aşamasında normalize edilmiş karar matrisinin elemanları kriterlere verilen önem doğrultusunda ağırlıklandırılarak, ağırlıklandırılmış matris oluşturulmaktadır. Burada ağırlıkların belirlenmesinde karar vericinin sübjektif görüşleri yer almaktadır.

$$d_{ij} = w_j * x^*_{ij} \qquad \text{i=1,.....,n; j=1.....k} \tag{2}$$

Dördüncü aşamada maksimize ve minimize kriterler için ağırlıklandırılmış matristeki değerler eşitlik 3 ve eşitlik 4 ile tanımlandığı şekliyle toplanmaktadır.

$$S_{i+} = \sum_{j=1}^{k} d_{ij} \qquad \text{j=1, 2,.....k (maksimize kriterler)} \tag{3}$$

$$S_{i-} = \sum_{j=k+1}^{n} d_{ij} \qquad \text{j=k+1 , k+2 , ... , n (minimize kriterler)} \tag{4}$$

Beşinci aşamada her alternatif için göreceli önem değeri eşitlik 5 kullanılarak hesaplanmaktadır.

$$Q_i = S_{i+} + \frac{\sum_{i=1}^{m} S_{i-}}{S_{i-} \sum_{i=1}^{m} \frac{1}{S_{i-}}} \qquad \text{i=1,.....,n} \tag{5}$$

Altıncı aşamada en yüksek göreceli önem değeri eşitlik 6 kullanılarak hesaplanmaktadır.

$$Q_{max} = \text{en büyük } \{Q_i\} \quad \forall i = 1,2, \dots , m \tag{6}$$

Yedinci aşamada ise performans indeksi eşitlik 7 kullanılarak hesaplanmaktadır.

$$P_i = \frac{Q_i}{Q_{max}} * 100 \tag{7}$$

3.3. Analiz Bulguları

COPRAS yönteminin ilk aşaması olan karar matrisi Tablo 2'de yer aldığı şekliyle elde edilmiştir.

Tablo 2: Karar Matrisi

Karar Alternatifleri	KRİTERLER			
	Stratejik	Bölgesel	Büyük Ölçekli	Genel
Birinci Bölge	0,07957247	0,561474732	0,067059428	0,29189336
İkinci Bölge	0,02530263	0,390424496	0,149228894	0,43504397
Üçüncü Bölge	0,52993906	0,256097942	0,025740909	0,18822208
Dördüncü Bölge	0,1642882	0,376582266	0,047417851	0,41171167
Beşinci Bölge	0,00711732	0,465990229	0,074960407	0,45193204
Altıncı Bölge	0	0,566501815	0,007075783	0,42642240

Yönteminin ilk aşaması olan karar matrisi oluşturulmasını takiben uygulanan birinci eşitlik ile normalize matris Tablo 3'de yer aldığı şekliyle elde edilmiştir.

Tablo 3: Normalize Karar Matrisi

Karar Alternatifleri	KRİTERLER			
	Stratejik	Bölgesel	Büyük Ölçekli	Genel
Birinci Bölge	0,09869825	0,21454314	0,180518029	0,13236440
İkinci Bölge	0,03138429	0,149183734	0,401710938	0,19727867
Üçüncü Bölge	0,65731347	0,097856686	0,069292243	0,08535276
Dördüncü Bölge	0,20377598	0,143894528	0,127644646	0,18669821
Beşinci Bölge	0,00882802	0,178057891	0,201786763	0,20493687
Altıncı Bölge	0	0,216464021	0,019047381	0,19336906

Normalize matrisin oluşturulması ile yöntemin üçüncü aşaması olan kriterlerin ağırlıklandırılması yapılmıştır. COPRAS yönteminde kriterlerin ağırlıklandırılması sübjektif olarak belirlenmektedir. Buna bağlı olarak normalize matriste yer alan kriterlerin her birinin eşit ağırlıkta olduğu varsayılmış ve eşitlik ikinin uygulanmasıyla yöntemin üçüncü aşaması olan Tablo 4'de yer alan ağırlıklandırılmış matris elde edilmiştir.

Tablo 4: Ağırlıklandırılmış Normalize Karar Matrisi

Karar Alternatifleri	KRİTERLER			
	Stratejik	Bölgesel	Büyük Ölçekli	Genel
Birinci Bölge	0,02467456	0,053635785	0,045129507	0,03309110
İkinci Bölge	0,00784607	0,037295934	0,100427735	0,04931966
Üçüncü Bölge	0,16432837	0,024464171	0,017323061	0,02133819
Dördüncü Bölge	0,05094399	0,035973632	0,031911161	0,04667455
Beşinci Bölge	0,002207	0,044514473	0,050446691	0,05123422
Altıncı Bölge	0	0,054116005	0,004761845	0,04834226

Ağırlıklandırılmış normalize matrisin oluşturulmasıyla yöntemin dördüncü aşamasına geçilmiştir. Bu aşamada ilk olarak kriterlerin maksimum mu yoksa minimum mu yönlü oldukları belirlenmiştir. Buna göre genel teşvikler minimum yönlü; stratejik yatırımlar, bölgesel yatırımlar ve büyük ölçekli yatırımlar maksimum yönlü kriterler olarak belirlenmiştir. Sonrasında ise maksimize ve minimize kriterlerin toplamı, eşitlik 3 ve eşitlik 4'ün uygulanmasıyla hesaplanmış ve Tablo 5'te sunulmuştur.

Tablo 5: Maksimize ve Minimize Kriterler Toplamı

Karar Alternatifleri	S_{i+}	S_{i-}
Birinci Bölge	0,12343985	0,033091101
İkinci Bölge	0,14556974	0,049319669
Üçüncü Bölge	0,2061156	0,02133819
Dördüncü Bölge	0,11882879	0,046674554
Beşinci Bölge	0,09716817	0,05123422
Altıncı Bölge	0,05887785	0,048342266

Yöntemin beşinci aşamasında eşitlik 5 kullanılarak hesaplanan göreceli önem değeri ve yöntemin yedinci aşamasında eşitlik 7 kullanılarak hesaplanan performans indeksi Tablo 6'da sunulmaktadır.

Tablo 6: Alternatifler için Göreceli Önem Değeri ve Performans İndeksi

Karar Alternatifleri	Q_i	P_i	Sıralama
Birinci Bölge	0,170958	61,09868	3
İkinci Bölge	0,177452	63,41957	2
Üçüncü Bölge	0,279807	100	1
Dördüncü Bölge	0,152518	54,50838	4
Beşinci Bölge	0,127859	45,69557	5
Altıncı Bölge	0,091405	32,66719	6

Performans indeksi 100 olan alternatif en iyi alternatiftir. Sıralama, performans indeks değerlerinin büyükten küçüğe sıralanmasıyla elde edilmiştir. Buna göre, en iyi alternatif %100 performans indeks değerine sahip olan üçüncü bölge, en kötü alternatif ise %32,67 performans indeks değeri ile altıncı bölgedir.

Tablo kapsamında sunulan göreceli önem değerleri ve performans indeksleri karşılaştırmalı olarak incelendiğinde bölgeler arası farklılık düzeyinin de yüksek olduğu görülmektedir. Sıralamada ikinci ve birinci bölge, üçüncü bölgeye en yakın bölgeler olsa da bu bölgelerdeki değerler ile üçüncü bölgedeki değerler arasındaki farklılık önemli ölçüde yüksektir. Buna bağlı olarak spesifik amaçlı teşviklerin uygulamadaki karşılığının esas itibariyle üçüncü bölgede ortaya çıktığı söylenebilir. Bu durum, Şekil 3 kapsamında değerlendirildiği gibi, üçüncü bölgede diğer bölgelere göre hem teşvik türleri içinde genel teşviklerin oranının belirgin ölçüdeki düşüklüğü, hem de stratejik yatırımların oranının belirgin ölçüde yüksekliğinden kaynaklanmaktadır. Bununla birlikte birinci ve ikinci bölgelerin değerleri oldukça yakınken, diğer bölgelerin hem bu iki bölgeden hem de birbirlerinden farklılık düzeyi yüksektir. Bu durum bu bölgeler arasında, dördüncü bölgede stratejik yatırımlara yönelik teşviklerin, beşinci bölgede büyük ölçekli yatırımlara yönelik teşviklerin göreli olarak yüksekliğinden kaynaklanmaktadır. Nitekim altıncı bölgede stratejik

yatırımlara yönelik teşvik uygulamada bulunmazken, büyük ölçekli yatırımlara yönelik teşvikler de çok düşük düzeydedir. Buna bağlı olarak sosyo-ekonomik gelişmişlik düzeyi kötüleştikçe, kararın amaç spesifik yapısına uygun yatırım düzeyinin belirgin ölçüde düştüğü sonucuna ulaşılmıştır.

4. Sonuç

Yatırım Teşvik Sistemi tarihsel süreçte farklı öncelikleri içeren amaçlar doğrultusunda, aktif maliye politikası aracı olarak kullanılmıştır. Planlı kalkınma dönemine geçiş ile sistematik hale gelen teşvik sistemi, özellikle 2000'li yıllardaki düzenlemeler ile de kalkınma planlarındaki hedef ve planlar doğrultusunda belirlenen öncelikler temelinde oluşturulan bir yasal zemine sahip olmuştur. Teşvik sistemi kapsamında farklı önceliklere ilişkin farklı düzenlemeler bulunmakla birlikte, 2009/15199 sayılı Yatırımlarda Devlet Yardımları Hakkında Karar ile birlikte farklı önceliklerin içerildiği ve bu önceliklere uygun teşvik yapısını içeren bütüncül bir yapı oluşturulmuştur. Yasal bağlamda oluşturulan bu yapının uygulamadaki karşılığı ise tam anlamıyla gerçekleşememiştir. Bu durum literatür kapsamında yapılan çalışmalar ile de desteklendiği gibi, bir taraftan 2009/15199 sayılı kararın öncelikler temelinde kategorize edilen teşviklerin farklı ölçeklerdeki mekânsal dağılımında ortaya çıkmaktadır.

2009/15199 sayılı Yatırımlarda Devlet Yardımları Hakkında Karar ile başlayan süreç kararın 2012/3305 sayılı karara dönüşümü ile Yatırım Teşvik Sisteminin öncelikler temelinde kurulan yapısı pekiştirilmiştir. Böylelikle sosyo-ekonomik gelişmişlik düzeyine göre bölgelerin kademelendirilmesi ve farklı önceliklerin teşvik türler itibariyle kategorize edilmesi, Yatırım Teşvik Sisteminin yasal bağlamının iki temel unsuru haline gelmiştir. Bununla birlikte her iki unsur bağlamında uygulamadaki durum ayrı ayrı ele alındığında, literatür kapsamındaki çalışmalar ile de ortaya koyulduğu gibi, gerek mekânsal olarak gerekse teşvik türleri itibariyle yatırımlarının dağılımın dengesiz olması nedeniyle, yasal bağlamın uygulamada tam anlamıyla gerçekleşemediği görülmektedir.

Kararın önceliklendirme temelli yapısının gerek ilk halinin gerekse mevcut halinin uygulama aşamasında karşılığını bulamaması literatürde yer alan ampirik çalışmalar ile dönemsel karşılaştırmaya da imkan verecek şekilde karşılaştırmalı olarak ortaya koyulmaktadır. Bu çalışma kapsamında ise literatürdeki çalışmalardan farklı olarak yatırım teşvik sistemi kapsamındaki yatırımların dağılımı, teşvik türleri itibariyle ve mekânsal bazda karşılaştırmalı olarak ele alınmaktadır. Böylelikle teşvik sistemi kapsamındaki yatırımların mekânsal dağılımına odaklanan literatüre söz konusu mekânsal dağılımın teşvik türleri itibariyle farklılaşma boyutu da eklenerek katkı sunulmaktadır. Bu doğrultuda çok kriterli karar verme yöntemi olan COPRAS kullanılarak teşvik türlerinin sosyo-ekonomik gelişmişlik düzeyine göre altı bölge itibariyle karşılaştırmalı önem düzeyleri incelenmiştir. Böylelikle Yatırımlarda Devlet Yardımları Hakkında Kararın önceliklendirme temelli amaç spesifik yapısının bölgeler bazında gerçekleşme düzeyi ortaya koyulmuştur. Bu kapsamda kararın amacına uygun teşvik kullanımında üçüncü bölge il sırada yer alırken; sırasıyla ikinci,

birinci, dördüncü, beşinci ve altıncı bölgelerin bulunduğu sonucuna ulaşılmıştır. Bu sıralamaya göre sosyo-ekonomik gelişmişlik düzeyi iyi olan bölgelerde kararın gerçekleşme düzeyinin diğer bölgelere göre yüksek olduğu görülmektedir. Bununla birlikte bölgelerin göreceli önem değerleri ve performans indeks değerleri arasında bulunan belirgin farklılığın gösterdiği gibi, kararın amacına uygun teşvik kullanım düzeyi bölgeler arasında önemli ölçüde farklılaşmaktadır.

5018 sayılı Kamu Mali Yönetimi ve Kontrol Kanununun amaç maddesi gereğince kamu kaynak kullanım sürecinin etkinlik, etkililik, verimlilik esaslarına uygun şekilde yürütülmesi gereklidir. Kamu kaynak kullanım şekillerden olan teşviklerin kullanımında da kalkınma planlarındaki plan ve hedefler göz önünde bulundurularak kararın amacına uygun süreç yönetiminin gerçekleştirilmesi gerekmektedir. Bu kapsamda Yatırımlarda Devlet Yardımları Hakkında Kararın uygulamada karşılığını bulabilmesi için yatırım teşvik sürecine yönelik iki temel öneri sunulmaktadır. İlk olarak yıllar itibariyle yatırım teşvik sistemi kapsamında yapılan yatırımların artması teşvik sisteminin temel performans ölçütü olarak değerlendirilmemelidir. Zira kararın temel amacı teşvik sistemi kapsamındaki yatırımların artması değil; yatırımların önceliklendirilmiş amaçlar doğrultusunda gerçekleştirilmesini sağlamaktır. İkinci olarak ise teşvik türleri itibariyle önceliklendirilmiş amaçlar doğrultusunda gerçekleştirilen yatırımların sosyo-ekonomik gelişmişlik seviyesine göre bölgeler arasında dengeli dağılımının sağlanmasına yönelik düzenleme yapılmalıdır. Bu kapsamda altıncı bölgeye sağlanan teşviklerin bir kısmı belirli süre ile sınırlı olmak üzere dördüncü ve beşinci bölgelere de sağlanarak bu bölgelerdeki teşvik türlerinin çeşitliliği artırabilir. Nitekim kararın amacı kapsamında farklı öncelikler de olsa bu önceliklerin birbiri ile çelişmeksizin, geçişlilik ilişkisi dahilinde uygulanması gereklidir. Buna göre kararın bölgesel dengesizliklerin giderilmesi şeklindeki amacının göz ardı edilmeksizin, dolayısıyla bölgeler arasındaki mevcut dengesizliğin derinleşmesine izin verilmeksizin, teşvik türlerinin dağılımında bölgesel dağılım da dikkate alınmalıdır.

Kaynaklar

Akan, Y., ve Arslan, İ. (2008). Türkiye' de Sektörel Yatırım Teşvik Belgeleri ile İstihdam Analizi: Doğu Anadolu Bölgesi Üzerine Bir Uygulama (1980-2006). *Çalışma ve Toplum*, 1:107-119.

Ay, H.M. (2005). Yatırım Teşviklerinin Sabit Sermaye Yatırımları Üzerindeki Etkisi. *Selçuk Üniversitesi Karaman İktisadi ve İdari Bilimler Dergisi,* 5 (2):176-184.

Çakmak, H. K., ve Erden, L. (2004). Yeni Bölgesel Kalkınma Yaklaşımları ve Kamu Destekleme Politikaları: Türkiye'den Bölgesel Panel Veri Setiyle Ampirik Bir Analiz. *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *6*(3), 77-96.

Doğan, E. (2018). Bölgesel Nitelikli Yatırım Teşviklerine Yönelik Temel Mantık ve Mekansal Otokorelasyon Yöntemi ile Bir Değerlendirme. *Maliye Araştırmaları Dergisi,* 4(3):141-158.

Erden, L., ve Karaçay-Çakmak, H. (2005). Türkiye'de Yerel Kalkınma ve Devletin Rolü: Bir Yöresel Panel Veri Analizi. *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 23(2): 13-32.

Ersan, Ö. Z., ve Buyrukoğlu, S. (2015). Osmanlı Döneminden Günümüze Türkiye'de Uygulanan Yatırım Teşvik Politikaları ve Etkinliği. *Gümrük ve Ticaret Dergisi,* 6: 35-59.

Eser, E. (2011). Türkiye'de Uygulanan Yatırım Teşvik Sistemleri ve Mevcut Sistemin Yapısına Yönelik Öneriler, (Uzmanlık Tezi). *T.C. Başbakanlık Devlet Planlama Teşkilatı Müsteşarlığı, İktisadi Sektörler ve Koordinasyon Genel Müdürlüğü, Ankara.*

Podvezko, V. (2011). The Comparative Analysis of MCDA Methods SAW and COPRAS. *Engineering Economics,* 22(2): 134-146.

Tezel, M. (2014). Türkiye'de 1980-2010 Yılları Arasında Yatırımlara Sağlanan Teşviklerin İbbs Çerçevesinde Bölgesel ve Sektörel Dağılımı ve Bölgesel Gelişme Farkları ile İlişkisi, *Türkiye'de Bölgesel Kalkınma ve Teşvik Politikaları* içinde (289-340.ss.). Mine Nur Bozdoğan, Nobel Akademik Yayıncılık, Ankara.

Üzümcü, A.,Topal,S., ve Akça, M. (2018). Türkiye'de Yatırım Teşviklerinin 2010-2017 Döneminde Gelişimi: 26 Düzey 2 Bölgesi Üzerine Bir İnceleme. *IV. International Caucasus-Central Asia Foreign Trade And Logistics Congress Proceeding Book* içinde (1103-1120.ss.).

Sanayi ve Teknoloji Bakanlığı (2019). İllerin ve Bölgelerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması Sege-2017 https://www.sanayi.gov.tr/merkez-birimi/b94224510b7b/sege/2017-il/erişim tarihi:30.04.2021.

Sanayi ve Teknoloji Bakanlığı (2021). Yatırımlarda Devlet Yardımları Hakkında Karar. https://www.sanayi.gov.tr/mevzuat/diger/mc0403018201/erişim tarihi:30.04.2021.

Sanayi ve Teknoloji Bakanlığı (2021). Yatırım Teşvik Uygulamaları. https://www.sanayi.gov.tr/destek-ve-tesvikler/yatirim-tesvik-sistemleri/md0103011615/erişim tarihi:30.04.2021.

Sanayi ve Teknoloji Bakanlığı (2021). Yatırım Teşvik Verisi (01.01.2001-31.03.2021). **https://sanayi.gov.tr/istatistikler/yatirim-istatistikleri/mi1304021615**/erişim tarihi:30.04.2021.

Yavan, N. (2012). Türkiye'de Yatırım Teşviklerinin Bölgesel Belirleyicileri: Mekânsal ve İstatistiksel Bir Analiz. *Coğrafi Bilimler Dergisi.* 10(1): 9-38.

Zavadskas, E. K., ve Kaklauskas, A. (1996). Multicriteria Evaluation of Building (pastatų sistemotechninis įvertinimas). *Vilnius: Technika*.

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Importance of Relational Database Approach to Achieve Circular Economy at A Regional Level

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Importance of Relational Database Approach to Achieve Circular Economy at A Regional Level

Abstract

Since the Industrial Revolution, great improvements in production efficiency have created an important infrastructure for people to consume more and more. The fact that today's industrial economies can produce large quantities of products easily and at low costs, made it possible for the consumer to consume more goods and services with the income they have. Continuously developing financial instruments have also paved the way for individuals to consume without having any financial savings. Adding to all these developments, the abundance of producers in the market and the flexibility of enterprises to enter and exit the market, a competitive environment that appears in favor of consumers has been created. If the current production and consumption approaches and trends are insisted, it is clear that inevitable, sudden and uncontrollable dramatic changes on nature and natural resources will occur in more severe cases. In this context, the circular economy phenomenon, which has started to find its place in the agenda, has been the starting point of this paper. However the circular economy is not easy to achieve because current linear production and consumption habits are the greatest resistance to a cyclical economic transformation. Moreover, there is no platform that offers a holistic perspective, a framework in the management of resource flows. In this study, the circular economy phenomenon is explained in general terms, the obstacles of transition to circular economy are defined and it is tried to express how important the relational database management is in the transition to the circular economy.

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1. Introduction

A significant increase has been observed in the use of resources in the last century. When the historical course of production and consumption is examined, it is seen how the Industrial Revolution has changed the process. After the Industrial Revolution, in parallel with the developments in production technologies and processes, there has been a significant increase in production volume, production speed and product variety, and as a result, product availability has increased and product purchasing costs have decreased. Due to the economic growth experienced around the world, considering the global average, per capita resource use increased from 5 tons to 10.3 tons between 1950 and 2010. Krausmann et al. (2009) states that the resource use rate of human beings increases on average 3.4% every year. Examining the consumption data of 177 countries for the years 1950-2010, Schaffartzik et al. (2014) notes the explosion in resource use (resource use has tripled in the last 40 years alone). According to the authors, at the beginning of the 21st century, 66 billion tons of material were consumed on a global basis each year, which corresponds to approximately 10 times that of 100 years ago. In the last century, the use of energy from fossil fuels has increased 100 times (Tibbs, 1996). The carbon dioxide emission level has increased by 30-40% since the Industrial Revolution. Carbon dioxide emissions increased by 50% only between 1990 and 2012 (Vasiljevic-Shikaleska et al., 2017). Meadows et al. (1972: 11-12) explained the global environmental consequences that population growth and resource use will create in the future with the publication "The Limits to Growth". According to the results of the study, the growth will end in 2100. After their renewed studies in 1992, they corrected this year to 2050. With each passing day, the burden of environmental impacts on nature due to consumption (and production as the supply side) becomes more evident. Especially since the 1960s, ecological problems have started to find more place on the world agenda. Negativities such as global warming, soil-sea and air pollution, greenhouse effect and acid rains, erosion of the ozone layer, droughts, rising sea level, climate change, and increasingly destructive natural disasters have become more and more talked about (Walsh, 2007). In this paper I will try to emphasize the importance of usage of relational database management as an approach to support circular transition of local economies. For this purpose, general situation of present economic model and concept of circular economy explained and subject supported with two real case summaries.

2. Current Structure of Consumption

Global industrial production today is 20 times higher than at the beginning of the 20th century. (Meadows et al., 1992: 131). Since the Industrial Revolution, there have been great improvements in production efficiency and the resulting large product stocks, It has created an important infrastructure to direct and direct people to consumption (Worldwatch Institute, 2004: 12). The four-year production of industrial workers in the eighteenth century can now be carried out in one week at our reputation. While an automobile chassis was built in 12.5 hours in 1913, it began to be built in 1.5 hours in 1914 thanks to innovations such as the assembly line, and today, 300 cars are produced in a car factory in Japan with only 66 workers and 310 robots. Such productivity gains have drastically reduced costs and increased sales. Another example of this is the semiconductor market; In 1970, the cost of one megabit of computer power was around 20,000 dollars, while in 2001 the cost fell to 2 cents (McNeill, 2001: 315). With the global experience of this situation, the consumption behavior and attitudes of the societies have also experienced serious changes. There has been a transformation from the production of production goods to the production of consumer goods. This new system has been called "consumer capitalism" by Bocock (1997: 43). Increasing consumption and increasing world population in lifestyles have made the group, which can be defined as the consumer class, ever more crowded. According to Bauman (1999: 132), expenditure and consumption are positive values for today's consumption capitalism. Because capitalism has matured, has accumulated capital, has developed its production technology, has learned to increase its profits and production volume. Today's economy does not need mass labor, but society needs its members as consumers. Fromm (2004: 62-64) argues that unlike the 19th century, when saving was seen as a virtue, the main virtue of the 20th century was expenditure and consumption. According to him, the meaning of life has changed, the only source of freedom and happiness is perceived as having more and better objects.

3. Concept of Circular Economy

The main goal of neoclassical economics, which adopts the linear economy (non-cyclical), is to make economic development permanent. Neoclassical economics, which considers the efficient sharing of resources in the market, fails to develop a mechanism that takes into account scarce natural resources. This economic approach, which ignores the limitation of natural resources, is not sustainable according to the material and energy flows in terms of the economic model (linear economy) it presents (Frosch and Gallopoulos, 1989).

After the Second World War, a rapid development was achieved with the adaptation of many new technologies developed during the war period to the production processes, the global economy grew rapidly and the increasing use of resources brought about the problem of waste and pollution. In the 1970s, waste

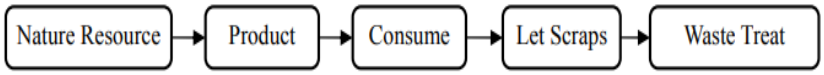
management became an important problem in the USA and Europe. With this period, the concept of 3R (reducing, reusing, recycling) started to gain popularity, and again in this period, polluter pays and end-of-pipe: the continuation of the current pollution process, the search for solutions after the occurrence of pollution. The situation of trying to eliminate the result instead of going down to the source of the pollution and eliminating it. For example, the principles of filtering the liquid wastes discharged into the stream or discharging the stream after adding other chemicals, installing filters on the factory chimneys have started to be considered as the basic rule (Reike, 2017: 3).

Considering the scarce natural resources, challenging the world's carrying capacity, and the current problems caused by production and consumption, it is obvious that a structural transformation is inevitable. Numerous new concepts have been developed to provide or serve this transformation. One of the concepts that has been developed for this transformation and has become more heard recently is the circular economy.

The concept of Circular Economy (hereinafter referred to by the abbreviation CE) emerged with the rethinking of industrial processes in the 1970s, inspired by the fields of industrial ecology and industrial metabolism (Frosch and Gallopoulos, 1989). Although the basis of the principles of CE has been stated much earlier by Boulding (1966), it is seen that the concept of CE was first used by Pearce and Turner (1990). The authors have tried to define the relationships between the environment and economic activities in their works and have tried to express a closed-loop material flow based on the principle that “everything is the input of something else”. Some previous concepts like "Limits of Growth", "Cradle to Cradle", "Performance Economy", "Remedial Design" model have been shaped around CE. However, it can be said that the EllenMacArthur Foundation has served the efforts to bring this approach into a conceptual framework. A "butterfly diagram" has been developed by this non-governmental organization, whose aim is to experience a global transformation, in which material flows are defined under two cycles as biological and technical resources. The concept of CE, which became more popular in the 1990s, is basically based on the logic that production processes generate minimum waste by using minimum material and energy. In order to achieve this, the life cycle of the product being produced is redesigned (Murray et al., 2017). The main purpose of CE is to keep resources (raw materials, energy and other resources) in the cycle for as long as possible and to keep the amount of waste to be minimized by methods such as extending the life of these resources, reuse, renewal and repair.

In linear economies; Enterprises use energy to transform raw materials into final products, sell products to consumers, and become waste when products lose their functionality or no longer satisfy desires (Urbinati et al., 2017: 488).

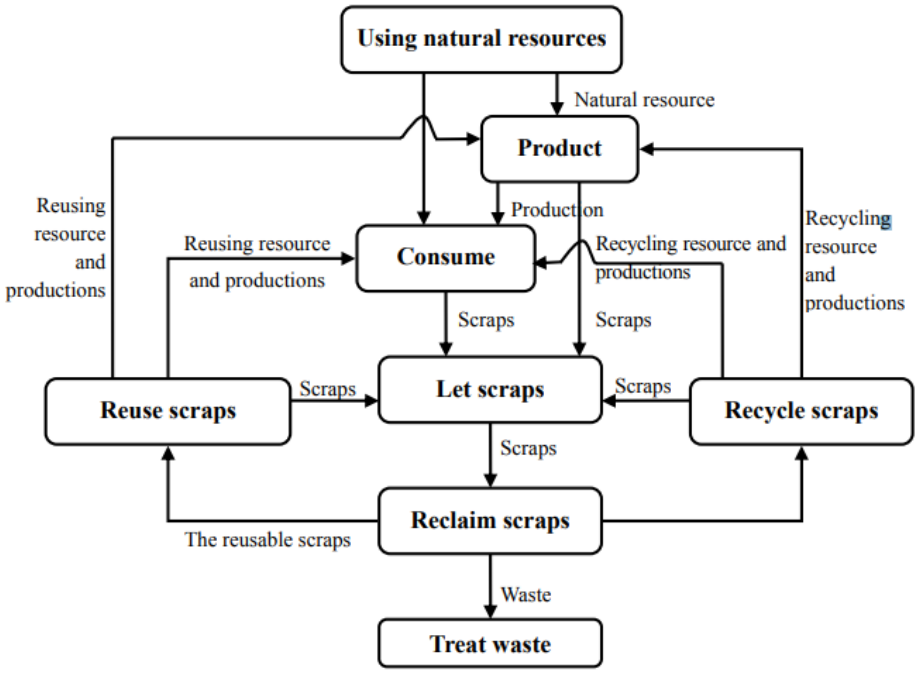
Figure 1: The Linear or Traditional Economy



Source: Yifang, et.al. 2007:5

The purpose of CE is to ensure the preservation of the value of the resources and materials used as long as possible and to use them as often as possible and to produce as little waste (if possible zero) as a result (Wilts, 2016). The CE aims to overcome the existing and dominant linear economic system (the traditional open-ended economy model that does not have a tendency to recycle and sees the environment as a waste storage) (Su et al., 2013).

Figure 2: The Pattern of Circular Economy



Source: Yifang, et.al. 2007:5

When different business models based on circular economy are examined, it is seen that they can be grouped under five different categories. These are:

- Extending product life,
- Service instead of product,
- Sharing platforms,
- Renewability,
- Resource efficiency and recycling.

Prieto-Sandoval et al., (2017: 23-24) argue that the following business models in three different categories should be implemented throughout the supply chain in order for CE to be achieved:

- Circular Innovation Models (CIM): Developing innovative processes to increase reuse and recycling potentials (consists of three models: the product design model, the process design model, and the circular supply model).

- Circular Use Models (CUM): It is aimed to produce the maximum value from the product by using it in an optimal way (consists of the sell-buy model, the sharing platform model, the product lifecycle model and the tracking facility model).

- Circular Output Models (COM): It takes into account the added value created by the output (waste) after the usage phase (consists of sub-business models such as providing technical support to improve life expectancy).

In addition, another issue that entrepreneurs should pay attention to is that new business models; It is not possible to take part in the circular economy without being supported by innovative technologies such as social media, mobile, data mining, cloud, and machine-to-machine communication.

4. Region Based Circular Economy

An "ecosystem metaphor" is used by Industrial Ecology to reduce the negative effects of production and consumption systems on the environment and to increase resource efficiency. This metaphor is based on the logic that nothing in nature will be garbage, that the waste of one species will be the food of another (van Berkel, 2007).

It is important to understand the concept of industrial symbiosis in order to provide circular economy on a regional basis. The phenomenon of industrial symbiosis is based on the understanding that different industries establish a partnership-based system to gain competitive advantage, and this system involves the physical change of water, materials, energy and intermediate products. In summary, it is the situation where businesses with geographic proximity come together and establish cooperation networks among themselves (Chertow and Lombardi, 2005). These systems established by public and private sector enterprises can also be expressed as local partnerships based on the purchase and sale of waste products. Thus, added value production due to common economies increases and significant gains can be achieved for the environment. It is possible to produce more with less, lower costs, less emissions, more competitive initiatives and transition to more flexible societies.

One of the best example of industrial park based symbiosis was established in Denmark. In Kalundborg City, based on buying and selling wastes (gas, water, water

vapor, ash, gypsum, oil and so on) has been established. Public and private enterprises can coordinate energy, water and material flows. Businesses have achieved a closed-loop industrial production by selling their wastes and purchasing other businesses' wastes in Kalundborg Industrial Park. Owing to established symbiotic system, energy savings equal to the annual electricity consumption of more than 75,000 families were achieved, while 45,000 tons of oil, 15,000 tons of coal, 90,000 tons of gypsum and 3 million cubic meters of water were saved annually. The release of excess carbon dioxide, 10,200 tons of sulfur dioxide and 4,500 tons of sulfur was prevented (Jacobsen, 2006).

For achieving CE in a regional base some steps needed to complete. The first step in this direction is to analyze the current situation of the region in order to achieve the relevant transformation. So following stages should be completed;

- To understand what opportunities are available for the transition to a circular economy within the value chain of a particular region

- To estimate the types of transformations can be experienced in different sectors that can enable the transition to a circular economy (to understand the types of transformations will be needed).

- To discover the potential of regional current activities and skills that suit the circular economy.

- To realize the Technologies which will we be needed to keep the materials and energy resources the particular region use in production more in the loop.

- To identify the ways of increasing the value of products provide throughout their lifecycle.

In the circular economy, an inventory showing the current potential of the region is needed and the actors that will take part in the operation of the process should be clearly stated. Building a symbiotic network of relationships is vital in this process. It is very important to see resource flows and identify possible matches with a holistic perspective to achieve success. At this point, a relational database management can be considered as an effective mechanism.

5. Using Relational Database for Circular Transtion

Advances in information and communication technologies have revealed the concept of "big data". So databases are vital to most modern businesses. Today, deriving meaningful relationships from huge data traffic and using them in daily life makes a difference in terms of competition. It is widely used in the information management process by storing and organizing large volumes of data. (Li, et al., 2005: 3410). Although technologies and standards for the hardware part of the database management have developed, it is not easy to generate meaningful relationships from huge data pools. There are some different approaches fort his purpose. One of these approached is called as relational database management

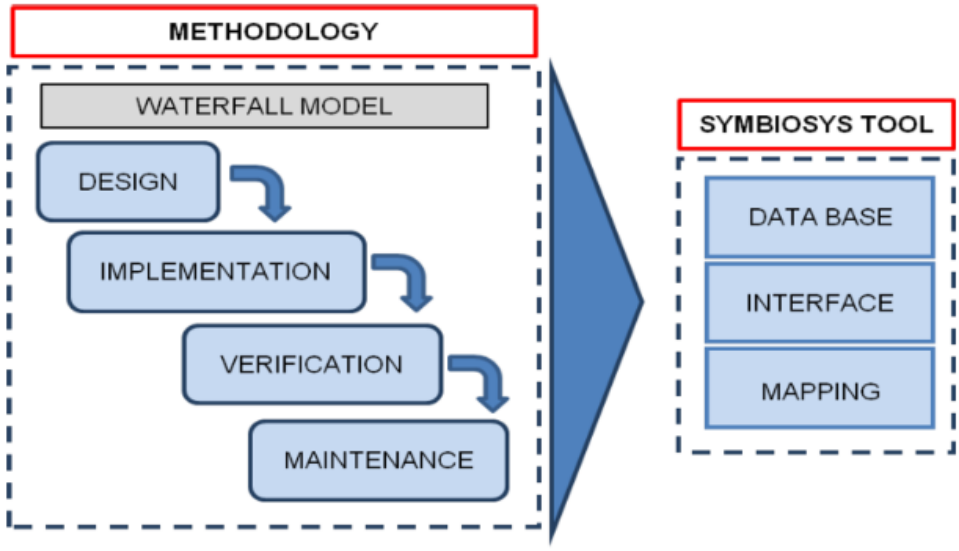
which is used to make sense of unstructured data is the system (Jung et al., 2015: 14) .

When it comes to environmental impacts of production and consumption, relational database management should be considered. Relational database management is a unique tool for determining resource flows and making various planning in an economy. According to Yifang, et al. (2007) main methods used are the environment input-output (EIO) analysis and waste input-output analysis (WIO).

Yazan and Fraccascia (2020) argue EIO models (which are a specific set of Input-Output models) as useful tool to map the physical and monetary flows. According to them EIO models able to map different levels of flows among production processes. These levels are: inside the company, among companies in a supply chain, among companies in different supply chains.

In order to realize a circular economy in a particular region, it is necessary to know the internal and external logistics flows, resource flows, input and output types and quantities, wastes and by-products generated during production. Thus, the current circular economic potential in the relevant region can be discovered, possible matches can be identified and information flow between stakeholders can be provided. Using a relational database to achieve this will speed up, facilitate and make the process more efficient.

Figure 3: Waterfall Model of The Symbiosys

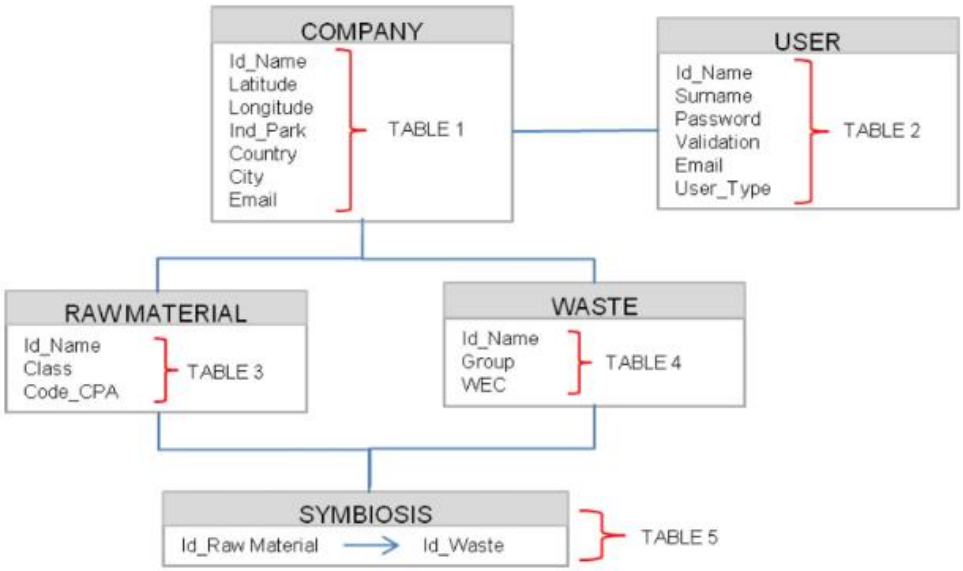


Source: Alvarez, R., and Ruiz-Puente, C. 2017: 1523

In this study, examples from two different applications will be given. The first work belongs to Alvarez, R., and Ruiz-Puente, C. (2017), and they express a database architecture they call as "symbiosis tool". With this database architecture, the researchers focused on storing large volumes of data and analyzing them quickly and efficiently, making them accessible at all times by all users, and ensuring that the results contain a level of visuality that everyone can understand. For this, they used a moted called waterfall model (Figure.3).

Researchers have used a relational database for programming of the SymbioSyS. The database has an algorithm consisting of five tables related to each other (Figure 4). The first table consists of information about businesses. The second table, referred to by the username, contains user profiles for each business in the database. In this sense, there are two different user profiles: entrepreneur and employee. The third table contains the standard classifications for the products. Using this classification, the user defines the necessary inputs for production (raw material, by-product). The fourth table contains a standard waste classification hierarchy. Table five, referred to as symbiosis, represents the possible variation mappings between raw materials and waste.

Figure 4: Structure of the Relational Database of The Symbiosys

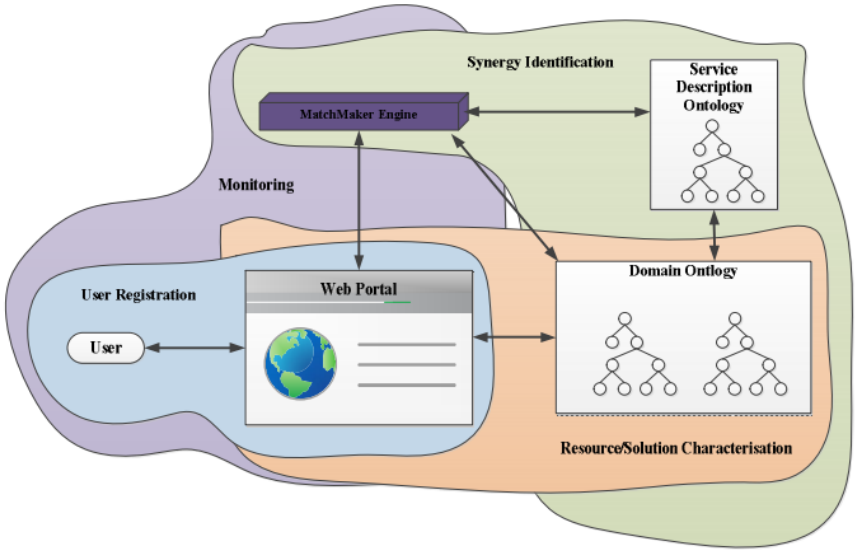


Source: Alvarez, R., and Ruiz-Puente, C. 2017: 1524

Another case will be explained in this paper is called as “eSYMBIOSIS - Development of knowledge-based web services to promote and advance Industrial Symbiosis in Europe”. The aim of eSYMBIOSIS, a project funded by the European Union, was to create a web-based platform to support industrial symbiosis. Thus, automatic matching would be made between businesses similar to their economic and environmental objectives, and communication between the parties would be

established. As a result, it is expected that the amount of waste generated by the raw material / natural resources used will decrease.

Figure 5. Structure of eSymbiosis Platform



Source: Ceceljaa, F. et al. 2012:13

According to Ceceljaa, F. et al. (2012: 13) the eSymbiosis service supports all the functions of IS operation as shown in Figure 5. These are:

- The user registration via a web portal (activities of organization and contact information)
- Resource/solution characterisation (resources used in production, produced waste resources, processing Technologies)
- Synergy identification and input-output matching (matching the user description ontology eith all other use population)
- Monitoring of IS operation and reporting (user reports details of realized exchange operation periodically)

6. Conclusion

In its current form, the continuation of production and consumption habits is not considered sustainable. Considering the destructive effects of global warming that make itself felt more and more every day and the scarcity of natural resources, the current linear economy understanding should be abandoned immediately. The production and consumption volume and methods, which are much higher than the world's carrying capacity, have pushed global citizens, especially scientists, to

new searches of innovative approaches. Circular economy is one of the concepts that have recently started to come into the agenda quite widely. Transition to the circular economy, which can be summarized as efforts to keep resources in use as much as possible with different approaches and business models, is a painful process. Current production technologies and the profitability of economies of scale show resistance on the supply side. The fact that consumers do not complain about the current structure encourages the supply side to continue in the linear economy model. In this context, a planned approach is required. The process of transition to circular economy can be handled on a regional basis. It would even be more correct to do so. Because each region has different characteristics, it will be more efficient if the vision and strategies to be developed are specific to the region. It is vital to define the potential and stakeholders for the circular economic structure for each region, regardless of its scale. In addition, discovery of possible exchange relations between stakeholders and informing and encouraging the stakeholders on the issue will also accelerate the process.

In this study, the issue of circular economy is discussed in general terms and it is tried to express how important the use of relational database is in transition to circular economy. For this purpose, two examples are given in general terms. When the literature is examined, it is seen that the relational database issue is mostly handled with the software dimension. However, the definition of potential collaborations and exchange relations within the region using a relational database is a separate topic that needs to be studied, and in this sense, it can be said that there is a gap in the literature.

References

Alvarez, R., & Ruiz-Puente, C. (2017). Development of the Tool Symbiosys to Support the Transition Towards a Circular Economy Based on Industrial Symbiosis Strategies. Waste and Biomass Valorization, Vol. 8, No. 5, p. 1521-1530.

Bauman, Z. (1999). In Search of Politics. Polity Press: Cambridge

Bocock, R. (1997). Tüketim. (Çev., Grem Kutluk) Dost Kitabevi Yayınları, Ankara.

Boulding, K. E. (1966). The Economics of the Coming Spaceship Earth. Environmental Quality Issues in a Growing Economy.

Ceceljaa, F., Raafata, T., Trokanasa, N., Innesc, S., Yanga, A., Smithc, M., & Kokossisb, A. (2012). E-Symbiosis: A Technology-enabled Industrial Symbiosis Targeting SMEs and Innovation. In Proceedings of Conference on the Greening of Industry Network, 22–24 October. Sweden.

Chertow, M. R., & Lombardi, D. R. (2005). Quantifying Economic and Environmental Benefits of Co-located firms.

Esymbiosis- Development of Knowledge-based Web Services to Promote and Advance Industrial Symbiosis in Europe, http://esymbiosis.clmsuk.com/

Fromm, E. (2004). Çağdaş Toplumların Geleceği. (çev. Aydın Arıtan-Kaan H. Ökten). İstanbul: Arıtan Yayınları.

Frosch, R. A., & Gallopoulos, N. E. (1989). Strategies for Manufacturing. Scientific American, Vol. 261, No. 3, p. 144-153.

Jacobsen, N. B. (2006). Industrial Symbiosis in Kalundborg, Denmark: A Quantitative Assessment of Economic and Environmental Aspects. Journal of Industrial Ecology, Vol. 10. No. 1-2, p. 239-255.

Jung, M. G., Youn, S. A., Bae, J. & Choi, Y. L. (2015, November). A study on Data Input and Output Performance Comparison of Mongodb and Postgresql in the Big Data Environment. In 2015 8th International Conference on Database Theory and Application (DTA) (p. 14-17). IEEE.

Krausmann, F., Gingrich, S., Eisenmenger, N., Erb, K. H., Haberl, H. & Fischer-Kowalski, M. (2009). Growth in Global Materials Use, GDP and Population During the 20th Century. Ecological Economics, Vol. 68, No. 10, p. 2696-2705.

Li, M., Du, X. Y. & Wang, S. (2005, August). Learning Ontology from Relational Database. In 2005 International Conference on Machine Learning and Cybernetics, Vol. 6, p. 3410-3415). IEEE.

McNeill, J. R. (2001). Something New under the Sun: An Environmental History of the Twentieth-Century World (the global century series). WW Norton and Company.

Meadows, D.H., Meadows, D.L. & Randers, J. (1992). Beyond the Limits: Global Collapse or a Sustainable Future. Earthscan Publications, London.

Meadows, D.H., Meadows, D.L. & Randers J. (1972). Beyond the Limits, Wite River Junction. VT: Chelsea Green Publishing Company.

Murray, A., Skene, K. & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. Journal of Business Ethics, Vol. 140, No. 3, p. 369-380.

Prieto-Sandoval, V., Jaca, C., & Ormazabal, M. (2017). Circular economy: Relationship with the Evolution of the Concept of Sustainability and Strategies for its Implementation. Memoria-Investigaciones En Ingenieria, Vol. 15, p. 85-95.

Reike, D., Vermeulen, W. J. & Witjes, S. (2017). The Circular Economy: New or Refurbished as CE 3.0?- Exploring Controversies in The Conceptualization of the Circular Economy through a Focus on History and Resource Value Retention Options. Resources, Conservation and Recycling.

Schaffartzik, A., Mayer, A., Gingrich, S., Eisenmenger, N., Loy, C. & Krausmann, F. (2014). The Global Metabolic Transition: Regional Patterns and Trends of Global Material Flows, 1950–2010. Global Environmental Change, Vol. 26, p. 87-97.

Su, B., Heshmati, A., Geng, Y. & Yu, X. (2013). A Review of the Circular Economy in China: Moving from Rhetoric to İmplementation. Journal of Cleaner Production, Vol. 42, p. 215-227.

Tibbs, H. (1996). Sustainability: The Source Of The Crisis. Global Business Network: Scenario Thinking.

Urbinati, A., Chiaroni, D. & Chiesa, V. (2017). Towards a New Taxonomy of Circular Economy Business Models. Journal of Cleaner Production, Vol. 168, p. 487-498.

Van Berkel, R. (2007). Eco-efficiency in Primary Metals Production: Context, Perspectives and Methods. Resources, Conservation and Recycling, Vol. 51, No. 3, p. 511-540.

Vasiljevic-Shikaleska, A., Gjozinska, B. & Stojanovikj, M. (2017). The Circular Economy-A Pathway To Sustainable Future. Journal of Sustainable Development, Vol. 7, No. 17, p. 13.

Walsh, B. (2007). The Gore interview. Time, Vol. 170, No. 27, p. 98.

Wilts, H. (2016). Germany on the Road to a Circular Economy?. Friedrich-Ebert-Stiftung, Division for Economic and Social Policy.

Yazan, D. M. & Fraccascia, L. (2020). Sustainable Operations of Industrial Symbiosis: An Enterprise Input-Output Model Integrated by Agent-Based Simulation. International Journal of Production Research, Vol. 58, No. 2, p. 392-414.

Yifang, L., Renchen, T. & Jian, X. (2007). The Input-Output Analysis of The Circular Economy. In 16th International Input-output Conference.

Worldwatch Institute-Dünyanın Durumu (2004). Sürdürülebilir Toplum İçin Worldwatch Enstitüsü Raporu, Türkiye İş Bankası Kültür Yayınları, TEMA Vakfı Yayınları, İstanbul.

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Human Capital and Relational Capital on University Quality with Environmental Uncertainty as Moderating Variables (Evidence in Java Island-Indonesia)

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Human Capital and Relational Capital on University Quality with Environmental Uncertainty as Moderating Variables (Evidence in Java Island-Indonesia)

Abstract

Universities must face environmental uncertainty, which includes internal uncertainty and external uncertainty, which is very difficult for universities to predict and threatens the university's sustainability. This research aims to prove the effect of human capital and relational capital on university quality and environmental uncertainty that can affect university quality. The method used in this research is multiple regression, using purposive sampling and primary data in an online questionnaire. This study concluded that human capital and relational capital affect quality, and environmental uncertainty does not moderate the influence of human capital and relational capital variables on university quality. This research's contribution provides additional insight and input on the importance of human capital and relational capital in improving quality and the need to anticipate the external environment's uncertainty.

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1. Introduction

Higher education quality is measured using the quality dimension of human resources, namely lecturers, students, and educational staff. The quality of higher education is an agenda in determining the Ministry of Research, Technology, and Higher Education strategy from 2015 to 2019, aiming to improve the quality of higher education (Hendayana, 2020). The strategy carried out by the government to create excellence and competitiveness is carried out by increasing the quality of human resources, which are human capital for the university (Kucharčíková, Tokarčíková, & Blašková, 2015). Improving the quality of human resources (students, lecturers, and education staff) is carried out through competency enhancement, improving the university's quality (Hill, Lomas, & Macgregor, 2003). Regarding the quality of human resources, Wahyudin & Suwirta (2020) explains that the cause of the not optimal quality of education in Indonesia is seen by domestic university graduates' inability to compete with foreign university graduates. The inability of higher education to compete in the labor market requires the role of the government. Through the Ministry of Research, Technology, and Higher Education, the government's role encourage universities to improve quality by providing material and non-material assistance. Material assistance in the form of an Education fund 20% of the government expenditure budget of 2019 is used to improve human resources quality (Sukmana & Jatmiko, 2019). The government also conducts university rankings as a step to encourage improvement in university quality. This ranking is a trend both among universities in the country but universities abroad.

Altbach & Hazelkorn (2018) reveal the trend of global ranking or universities' world to be a solution that can be recognized as an indicator of university quality. In Indonesia, the policy taken by the government through the ministry of research and higher education technology determines the ranking of universities based on the QS World University Ranking as the official reference for world university rankings to encourage universities in Indonesia to become involved and become one of the universities that have world quality. However, the universities referred to are only state universities such as the University of Indonesia (UI), the Bandung Institute of Technology (ITB), Gadjah Mada University (UGM), and other public universities. These universities are expected to be able to compete with other universities abroad. In 2017 for the first time, UI was ranked 277th, and ITB ranked 331st and was followed by other public Universities.

The university's quality is inseparable from the stakeholders' role, for that the university must always establish good relations by collaborating in the academic and non-academic fields. The Triple Helix concept, which describes a good relationship between university-industry-government, is intended to develop

public knowledge. Triple Helix assumes that the potential for creating innovation and economic development of society through knowledge lies in the more prominent role of the university and the combination of elements from university, industry, and government to produce institutional and social formats for producing, transferring, and applying knowledge (Fischer et al., 2018; Laursen, Reichstein, & Salter, 2011). The relationship between the university, industry, and government, which is a relational capital, can improve the university's quality and create a competitive advantage through innovation. Lee & Ngo (2012) explain that the triple helix, which is the relationship between university-industry and government by using and utilizing knowledge aimed at developing society, is essential in an environment of global competition.

The Kemenristekdikti (education ministry of Indonesia), annually announces the ranking of universities in Indonesia, both public and private. In general, in the top 100 rankings, public universities still dominate compared to private universities. There are still many private universities that are left behind and only occupy the lower ranking. This is because private universities have their own goals, missions, and uniqueness. Higher education rankings often override this and consider all universities to be the same so that they are assessed in the same way, whether large public universities or private universities. The diversity of universities rarely gets space and attention. Private universities are inevitably forced to match a specific institutional model, universities with the best ranking, while universities with characters that are not in line with the ranking's focus will be eliminated.

The Kemenristekdikti annually announces the ranking of universities in Indonesia, both public and private. In general, in the top 100 rankings, public universities still dominate compared to private universities. There are still many private universities left behind and only occupy a lower ranking than public universities (Rahayu, 2011). This is because private universities have a purpose, mission, and uniqueness according to their needs and desires. Higher education ranking often overrides this uniqueness and considers all universities to be the same. It is assessed by the same good aspects between public universities and private universities. The diversity of universities rarely gets space and attention. Private universities are inevitably forced to adjust the public university model with the best ranking, while universities with aspects that are not in line with the focus will be eliminated.

Private universities still have a lot to catch up with to achieve better quality and equal public universities. The indicators required in ranking universities, especially universities, are the quality of human resources, the quality of management, the quality of student activities, and the quality of research and publications. All tertiary institutions in Indonesia must meet these four requirements. The quality of human resources is a significant concern for universities must be able to manage them properly. Anwar Ul Haq et al. (2020) explained that intellectual capital through quality human resources proxies significantly affects higher education quality.

Human resources are intellectual capital that has a role in improving the quality and competitiveness of the organization.

Furthermore, intellectual capital makes universities focus on managing their resources so that they can survive in a rapidly changing knowledge-based environment (Muhammad, 2016). Intellectual capital is significant in creating value and maintaining a competitive advantage (Jardon & Martos, 2012). Public and private sector organizations pay attention to their primary activity and must be able to adapt to the development of knowledge and innovation as a source of sustainable excellence (Bontis, 2001). Also, to survive in a competitive environment, universities must have the intellectual capital to achieve the goal of creating knowledge that can increase their competitive advantage (Marti, 2004). According to Ramírez & Gordillo (2014), the intangible elements that are very important and must be measured are capitalized in the academic profession and teaching capabilities. Apart from human capital, relational capital is also significant and must be measured through graduates who are already working, student satisfaction, and the university's relationship with industry (Hormiga, Batista-Canino, & Sánchez-Medina, 2011).

Furthermore, relational capital benefits the university, including students and parents, as consumers provide feedback regarding service quality to contribute to its reputation. Cooperation between universities and industry, which is explicitly realized through a contract of understanding, will benefit both parties in regulating the supply of resources. Meanwhile, cooperation with the government is needed by the university (Guo & Zhuang, 2018).

In addition to adequate and continuously developing human capital and relationship capital, universities are required to take advantage of their ability to see and use opportunities, identify problems, select solutions to problems, and adapt to environmental changes (Nugroho et al., 2017). Environmental changes that create uncertainty will make it difficult for university leaders to predict the future, make it difficult to make plans and policies. If they cannot understand the state of the environment, they must anticipate environmental uncertainty in the form of changes in government regulations and advances in information and communication technology (Nugroho et al., 2020). The problem of environmental uncertainty is indicated by the lack of universities in responding to changes. Environmental uncertainty also occurs in Indonesia's universities that do not respond to environmental changes externally and internally. Changes in the technological environment and innovation, and economic globalization require universities to respond to changes (Altbach & Hazelkorn, 2018). Previous research to examine the effect of human capital and relational capital on university quality has been widely conducted. Still, the moderating effect of environmental uncertainty is rare. Chatterji & Kiran (2017) concluded that human capital affects

university quality by achieving good performance. Al-Tahat, Matarneh, & Moneim Ali (2019) argued that intellectual capital, which consists of human capital, relational capital, and structural capital, affects the university's quality. Another study by Nir & Sharma Kafle (2013) concluded that political stability affects university quality in several countries. From the description above, the question is whether it is true that human capital and relational capital affect university quality, while environmental uncertainty moderates the influence of these two variables.

2. Literature Review

2.1. Total Quality Management

Rad (2006) defines Total Quality Management as a concept in which all organizational managers are committed and involved to fulfill customer desires or satisfaction on an ongoing basis. Total Quality Management is a system that improves quality (Kanji, 1996). One of the quality management programs is Total Quality Management which is an integrated management philosophy that can be applied flexibly in public and private organizations through the improvement of a sustainable performance culture where a successful organization continuously strives to improve the quality of products or services to meet perceptions, expectations, as well as customer satisfaction (Imran et al., 2019; Mahliza et al., 2020). However, Total Quality Management is an integrated effort of an organization in achieving and maintaining high-quality products and or services by carrying out maintenance, system repair, and continuous error prevention processes at all levels and functions within the organization to fulfill needs that exceed customer expectations (Gimenez-Espin, Jiménez-Jiménez, & Martínez-Costa, 2013).

2.2. Human Capital and University Quality

Human Capital is an intangible resource that employees provide to the organization. Bontis (2001) defines human capital as representing the human factor in an organization that combines intelligence, skills, and expertise that gives the organization its character. The human element of organizations can learn, change, innovate, and provide creative encouragement. Moreover, if human capital is adequately motivated, it will ensure the organization's long-term sustainability (Gambardella, Panico, & Valentini, 2015). Human capital is not owned by the organization but is obtained through working relationships with employees (Lepak & Snell, 2002). Human capital will impact organizations because they have competency through experience and training (Lim, Chan, & Dallimore, 2010). Also, according to Secundo et al. (2017), there are three critical activities to improve the quality of higher education: (i) The teaching process, (ii) Research quality, and (iii) Innovation activities (intellectual capital). Intellectual capital will increase the university's competitiveness and stimulate innovation by transferring knowledge and technology to the industry.

Human capital, which is part of the university's intellectual capital, consists of students, lecturers, and academic staff (Vodenko & Lyausheva, 2020). These three elements have an essential role in improving the quality of the university. Furthermore, the Kemenristekdikti policy is that to achieve SDGs (Sustainable Competitive Goals), one must improve the quality of highly educated human resources. The strategic goal that needs to be done is to improve the university's quality by improving the quality of learning and lecturer competence, the number of lecturers with doctoral degrees, and the number of researches (Lessing & Schulze, 2004). Therefore, human capital is significant and influences the university's quality (Islam et al., 2016). Moreover, Grange (2011) concluded that human capital significantly affects universities' quality through education investment. The best quality of graduates from tertiary institutions will contribute to progress in all industries and further impact economic growth.

2.3. Relational Capital and University Quality

Bontis (2006) states that relational capital is all sources associated with external parties in the business, such as customers, suppliers, and partners in research and development. Relational capital in which human capital and structural capital are interrelated in business activities with outside stakeholders. Mtawa et al. (2016), Universities can improve their quality by optimizing relational capital where the more they collaborate with the community, the better the university's quality. There is a triple helix-based cooperation model, namely the interaction between universities, government, and industry to develop knowledge (Zhou, 2008). Furthermore, according to Secundo et al. (2017), the elements of relational capital use indicators (i) Academic collaboration with outsiders in transferring technology and knowledge; (ii) Developing university networks through cooperation with strategic industries.

Stephen M. Nowlis & Simonson (1996) argue that quality is the totality of features and characteristics of a product or service that can satisfy customer needs. Murias et al. (2008) define quality in higher education as consisting of three points of view. First, in terms of functionality, where the quality of higher education is defined as the harmony between the results and the general goals of higher education. Second, in terms of effectiveness, quality is defined as the harmony between the results and the activity's specific objectives. The third is the harmony between the results with the input and the process in terms of efficiency. Moreover, according to Jørgensen et al. (2006), a university's systematic quality improvement includes developing a management plan, continuous quality improvement, and delegating responsibility for quality improvement related to integrated management.

One of the government's strategies to improve the universities' quality is by establishing good relations between universities, industry, and the government,

known as the Triple Helix. Triple Helix is a relational capital that the university carries out to improve its quality by developing a knowledge-based society. According to Lee & Ngo (2012) and Zhou (2008), Universities need to make synergies and collaborations with industry to support economic development and the growth of science, business organization, and funding. Research conducted by Chatterji & Kiran (2017) concluded that relational capital is an essential factor that strengthens human capital's influence on university performance. Nevertheless, to achieve the goals that have been set, universities must be supported by substantial human capital and relational capital. Moreover, human capital and relational capital will help policymakers face the global shift towards the knowledge economy.

2.4. Environmental Uncertainty and University Quality

Environmental uncertainty is management's inability to predict the future because management does not have sufficient information about the organization's environment to predict the future Duncan (1972). Similar to Milliken (1987), the phenomenon of uncertainty has long occurred in life and affects choices and decision making. This uncertainty occurs because of a lack of understanding and facing uncertainty in organizational decision-making caused by adverse effects, missed opportunities, and inappropriate results (Abbott, 2005).

Environmental uncertainty is a factor that affects performance if the organization is unable to predict and adapt to environmental changes. Universities with good capital will be able to deal with this uncertainty (Wang et al., 2017), concluding that an organization will have a competitive advantage if facing environmental uncertainty and anticipating it by utilizing resources optimally. When the company's routine is no longer as expected, it will erode the competitive advantage. Moreover, the organization must be of quality by utilizing its intellectual capital, such as human capital. Nir & Sharma Kafle (2013) concluded that environmental uncertainty due to political stability impacts the quality of education in 47 countries where 26 are politically stable and 21 are politically unstable. The results showed that political stability had a significant effect on the quality of education. Education was the country's primary concern, primarily through improving the quality of human resources.

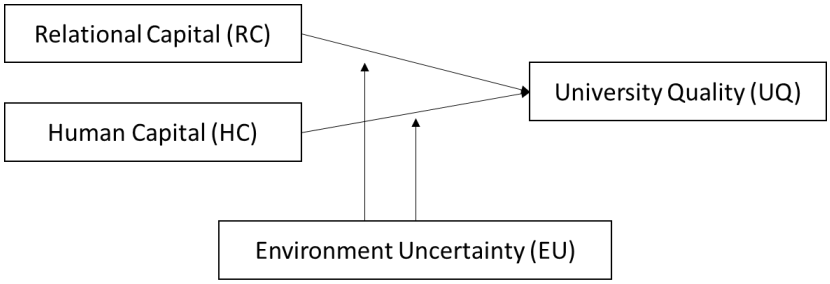
Sudirman et al. (2020) and Bennett & Lemoine (2014) explain that the ability to apply information technology in anticipating the era of volatility, uncertainty, complexity, ambiguity (VUCA) is an effort to deal with environmental uncertainty. Furthermore, the ability to apply information technology will encourage sustainability in facing challenges. Quality tertiary institutions that pay attention to learning and research are a stimulus for economic development and growth. Higher education must then work together by collaborating with industry. Moreover, Meissner & Wulf (2014) concluded that uncertainty affects organizational quality. Therefore, it is necessary to maintain good relationships with customers. Also,

uncertainty has a negative effect on the quality of the organization, so it needs adaptation, cooperation, communication, commitment, and trust

2.5. Conceptual Framework and Hypothesis

The conceptual framework in research refers to the background and literature review as follows:

Figure 1: Conceptual Framework



Referring to Figure 1 above, the hypothesis in this study is as follows:

- Ha1: There is an effect of human capital on the quality of the university;
- Ha2: There is an effect of relational capital on the quality of the university;
- Ha3: Environmental Uncertainty moderates the influence of human capital on the quality of the University;
- Ha4: Environmental Uncertainty moderates the effect of relational capital on the quality of the University.

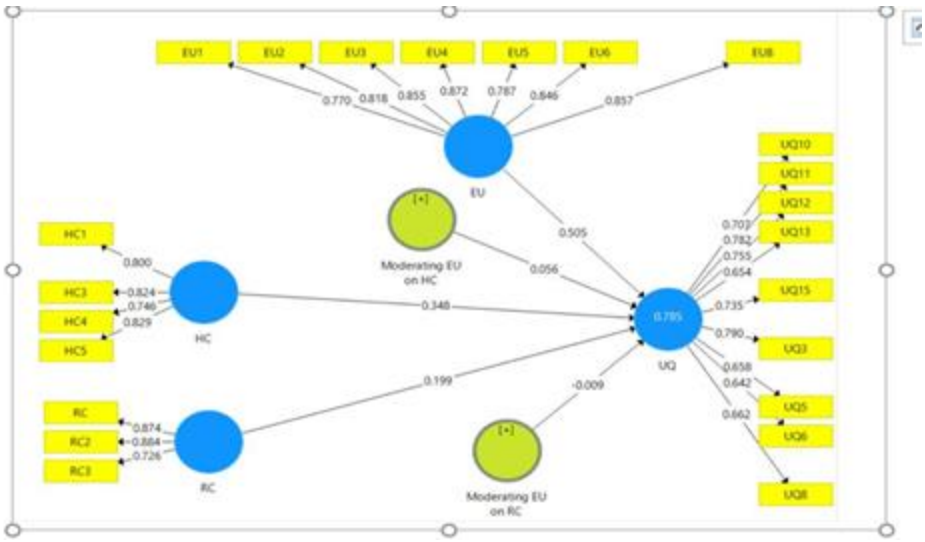
3. Methodology

This research uses descriptive and explanatory causal methods to test one variable that causes changes in other variables. The design in this study begins with a problem in the form of a phenomenon and then formulates its problem. To obtain research results that are following the objectives and represent the circumstances and the number of samples available, the researchers conducted the sampling technique used in this study with the simple random technique. This study population was private universities on the island of Java, as many as 319 private universities. The reason for selecting the sample in Java is that the number of universities in Java is the largest populated island in Indonesia. The research instrument testing was carried out using SEM-PLS to test the validity, reliability (outer model), and hypothesis testing (inner model).

4. Results and Discussion

Testing the Outer Model for each construct research variable is intended to determine the data's validity and reliability. The convergent Validity test for each reflexive indicator is considered valid if it has a loading factor value that meets the requirements above 0.7, which means that each variable's indicator is considered to have good validity or meet the suitability requirements above 0.70. However, at the research stage of scale development, the load factor above 0.50 to 0.60 is still acceptable (Ghozali, 2013). Furthermore, the reliability test was carried out on the research variables' constructs by measuring two criteria: composite reliability and Cronbach alpha. The research variable construct is declared reliable if the composite reliability and Cronbach alpha values are above 0.70 (Ghozali & Latan, 2015). The following are the results of data processing with the Outer Model as follows:

Figure 2: Test Construct Validity



Testing the Outer Model for each construct research variable is intended to determine the data's validity and reliability. The convergent Validity test for each reflexive indicator is considered valid if it has a loading factor value that meets the requirements above 0.7, which means that each variable's indicator is considered to have good validity or meet the suitability requirements above 0.70. Furthermore, According to the test results above (figure 2), all the constructs of the research variables of human capital (HC), relational capital (RC), environmental uncertainty (EU), and university quality (UQ) have met the validity requirements because they are at a level above 0.5. Furthermore, the outer model test is related to the research construct's reliability by looking at the value of Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (EVA). As in the table below (Table 6.1), all research variables meet the requirements for CA (Cronbach's Alpha), which is above 0.7, CR (Composite Reliability), which is also above 0.7.

Table 1: Reliability Test Results

Construct Reliability and Validity				
	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
EU	0.924	0.926	0.939	0.689
HC	0.814	0.833	0.877	0.641
Moderating EU on HC	1.000	1.000	1.000	1.000
Moderating EU on RC	1.000	1.000	1.000	1.000
RC	0.772	0.784	0.869	0.691
UQ	0.877	0.882	0.902	0.506

Furthermore, the R Square test is carried out where the R Square test is a test carried out to see the R-square value, which is a goodness-fit model test, which means that the model used in the study is fit or appropriate, that can see it in the R Square test table (table 2).

Table 2: R Square Test Results

Total Effects					
	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Statistics	P Values
EU -> UQ	0.505	0.506	0.065	7.771	0.000
HC -> UQ	0.348	0.349	0.056	6.258	0.000
Moderating Effect 1 -> UQ	0.056	0.056	0.040	1.393	0.164
Moderating Effect 2 -> UQ	-0.009	-0.011	0.039	0.226	0.821
RC -> UQ	0.199	0.199	0.083	2.394	0.017

Table 2 above shows that the variables Human Capital and Relational Capital have a significant effect on University Quality. However, Environmental Uncertainty is proven to not moderate, namely weakening or strengthening Human Capital and Relational Capital's influence on University Quality.

The results of research data processing show that human capital significantly affects the university's quality. This means that the increasing use of human capital in academic activities will further improve its quality. The private universities that become respondents understand very well and are aware of every indicator of human capital, namely knowledge, competence, lecturer experience as measured by the number of lecturers with doctoral education, and the number of lecturers who have associate professors. Human capital includes the number of lecturers who have educator certification and who have experience as resource persons or guest lecturers at other universities. These human capital indicators have a

significant effect on the quality of the university. This is following the criteria in the accreditation or ranking requirements based on university clusterization. Likewise, the skills possessed by educational personnel will improve the quality of academic and non-academic services. This research is following the theoretical concept of Gimenez-Espin et al. (2013), improving the quality of products and services of an organization or in this study, it is necessary to continue to carry out improvement in every function of the organization, where is the quality of human resources as the primary factor (Medsker, 1994).

Moreover, board management commitment and involvement also essential to support the human capital to impact the improvement of organization function (Carpenter et al., 2001). This study is in line with the research of Grange (2011) that human capital is significantly affecting the quality of universities through investment in education. Barbosa et al. (2016) state that human capital affects the quality of higher education, and it is a vital variable as a source of knowledge to improve the quality of human resources following the SDGs (Sustainable Development Goals), namely improving the quality of highly educated human resources through strategic goals of improving the quality of learning. This study is not in line with Mondal et al. (2012), who concluded that capital (human capital, structural capital, and relational capital) does not affect organizational quality.

Relational Capital in this study has a positive effect on the quality of the university. Universities that have relationships with other partners, both by the government, industry, and other universities (Triple Helix), will affect quality improvement by increasing collaborations, which will directly increase research or cooperation domestically and abroad. Regulation of the Minister of Education of the Republic of Indonesia No. 14 of 2014 states that cooperation between domestic universities and foreign universities will improve the university's quality. The implementation of this collaboration must be accompanied by proof of a Letter of Intent, Memorandum of Understanding, and Memorandum of Agreement documents. The implementation can include student exchanges, guest lecturers, and research collaboration. The existence of foreign cooperation carried out by private universities will impact the chances of accepting international students and the achievement of internationally accredited study programs. Also, that can realize cooperation between private universities and government, and industry through the recruitment of graduates to become employees or apprentices. Collaboration with external parties allows study programs to have a curriculum that is in line with industry demand. The results of this study are under the theoretical concept of Gazperz, Vincent (2008) that universities must focus on four factors, namely: (i) the needs of the labor market, (ii) a dynamic and market-oriented educational process, (iii) a controlled learning process (iv) produce competitive graduates. The implementation of these four factors can be accelerated if there is cooperation with the various parties.

Environmental uncertainty is a condition faced by universities due to universities' inability to predict changes in the external environment (Utami et al., 2020a). The function of predicting the external environment is to analyze the impacts of these changes and anticipate them (Utami et al., 2020b). The study results concluded that it turns out that environmental uncertainty does not moderate the influence of human capital on the quality of the university. The uncertainty of the external environment caused by external environmental factors is due to government regulations and policies. The impact of these regulations and policies causes the university to follow every new regulation or policy by utilizing human capital. However, not all universities can adjust due to the limitations of their human capital (Chatterji & Kiran, 2017). Likewise, the impact of technological changes because of their general nature must be followed by all stakeholders from tertiary institutions, such as online lectures carried out by lecturers and students during the Covid-19 Pandemic. Furthermore, almost all private universities are doing so. This study's results are not in line with Wang et al. (2017), who concluded that a quality organization would be able to deal with and anticipate environmental uncertainty by utilizing human capital. Nir & Sharma Kafle (2013) concluded that environmental uncertainty due to political instability impacts the quality of education, including human capital, which plays a role in producing university excellence.

The university's relational capital, manifested by establishing relationships in the form of cooperation carried out by universities with external parties such as the government, industry, and other universities do not affect its quality, moderated by environmental uncertainty. Uncertainty in the future that will affect the university's sustainability has begun to be anticipated by the university's strategies by utilizing its relational capital (Paoloni et al., 2019). Through cooperation with external parties (stakeholders), the university will have much information to anticipate this uncertainty's impact. Still, it will not improve the university's quality if it does not pay attention to the importance of cooperation. This research is in line with Leonidou et al. (2006), concluding that environmental uncertainty reduces the university's quality. Therefore, the steps that must take are establishing good relationships with outsiders, the need for adaptation, and increasing communication, commitment, and trust.

7. Conclusion

The results showed that the quality of private universities in Indonesia was quite good. In this study, two hypotheses have no significant effect: the human capital variable and the relational capital variable in university quality, moderated by the environmental uncertainty variable. Meanwhile, the variables of human capital and relational capital directly affect the university's quality.

Human Capital has a significant effect on the quality of the university. Human resources improve the quality of a tertiary institution, where human resources consisting of indicators of knowledge, attitudes, competencies, and experiences of lecturers and teaching skills significantly affect the quality of higher education. Furthermore, improving the quality of services, improving the quality of learning, the quality of publications and research, and community service activities have implications for the university's excellent ranking.

University Relational Capital, as measured by the indicators of the network development process and academic collaboration, has a significant impact on improving the quality of the university. The management of the university must have the ability to establish academic cooperation with other universities. The form of cooperation can be in research collaboration, student exchanges, and guest lecturers. Furthermore, university management must collaborate with industry and government players, such as providing internships or placing graduates who are accepted to work, significantly impacting university performance. Also, it can have a significant impact on the reputation of the university so that it becomes a reference for prospective students.

Human Resources, which are moderated by environmental uncertainty variables, do not affect the university's quality. This is due to the uncertainty of the external environment that universities will face in the future, such as changes in regulations or government policies and technology changes that can be anticipated and mitigated by higher education management through policies and programs that regulators have previously informed. Thus, the university can mitigate and anticipate future changes with its human resources and the university's relational capital.

References

Abbott, J. (2005). Understanding and managing the unknown the nature of uncertainty in planning. *Journal of Planning Education and Research*, *24*(3), 237–251. https://doi.org/10.1177/0739456X04267710

Al-Tahat, S. S., Matarneh, A. J., & Moneim Ali, O. A. (2019). The Impact of the Intellectual Capital of the University Administration in Achieving the Quality of Education. *International Journal of Economics and Finance*, *11*(2), 137. https://doi.org/10.5539/ijef.v11n2p137

Altbach, P. G., & Hazelkorn, E. (2018). Measuring Education Quality in Global Rankings: What's the Likelihood? *International Higher Education*, (95), 12–14. https://doi.org/10.6017/ihe.2018.95.10721

Anwar Ul Haq, Sadaf Mahmood, Zahira Batool, & Muhammad Shabbir. (2020). Grade Inflation and Human Capital Accumulation among Pakistani University Students. *Journal of Accounting and Finance in Emerging Economies*, *6*(3), 747–751. https://doi.org/10.26710/jafee.v6i3.1360

Barbosa, S., Vale, J., Teixeira Vale, V., & Castelo Branco, M. (2016). Intellectual Capital and Performance in Higher Education Organizations. In *Proceedings of the International Conference Theory and Applications in the Knowledge Economy (TAKE) 2016* (pp. 670–681).

Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, *57*(3), 311–317. https://doi.org/10.1016/j.bushor.2014.01.001

Bontis, N. (2001). Assessing Knowledge Asset: A Review of the Models Used to Measure Intellectual Capital. *International Journal of Management Reviews*, *3*(1), 41–60.

Bontis, N. (2006). Managing organisational knowledge by diagnosing intellectual capital: framing and advancing the state of the field. *International Journal of Technology Management*, *18*(5/6/7/8), 433. https://doi.org/10.1504/ijtm.1999.002780

Carpenter, M. A., Sanders, W. M. G., & Gregersen, H. A. L. B. (2001). Bundling Human Capital with Organizational Context : The Impact of International Assignment Experience on Multinational Firm Performance and CEO Pay. *Academy of Management Journal*, *44*(3), 493–511. Retrieved from http://10.0.9.3/3069366%5Cnhttp://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=4657228&site=ehost-live

Chatterji, N., & Kiran, R. (2017). Role of human and relational capital of universities

as underpinnings of a knowledge economy: A structural modelling perspective from north Indian universities. *International Journal of Educational Development*, *56*(August 2016), 52–61. https://doi.org/10.1016/j.ijedudev.2017.06.004

Duncan, R. B. (1972). Characteristics of Organizational Environments and Perceived Environmental Uncertainty. *Administrative Science Quarterly*, *17*(3), 313. https://doi.org/10.2307/2392145

Fischer, B. B., Schaeffer, P. R., Vonortas, N. S., & Queiroz, S. (2018). Quality comes first: university-industry collaboration as a source of academic entrepreneurship in a developing country. *Journal of Technology Transfer*, *43*(2), 263–284. https://doi.org/10.1007/s10961-017-9568-x

Gambardella, A., Panico, C., & Valentini, G. (2015). Strategic incentives to human capital. *Strategic Management Journal*, *36*(1), 37–52. https://doi.org/10.1002/smj.2200

Ghozali, I. (2013). *Aplikasi Analisis Multivariate dengan Program IBM SPSS 21 Update PLS Regresi*. Semarang: Undip Press.

Ghozali, I., & Latan, H. (2015). Partial Least Square, Konsep Teknik, dan Aplikasi menggunakan program SmartPLS 3.0 untuk Penelitian Empiris. Semarang: Undip Press.

Gimenez-Espin, J. A., Jiménez-Jiménez, D., & Martínez-Costa, M. (2013). Organizational culture for total quality management. *Total Quality Management and Business Excellence*, *24*(5–6), 678–692. https://doi.org/10.1080/14783363.2012.707409

Grange, L. Le. (2011). Human Capital, (Human) Capabilities and Higher Education. *South African Journal of Higher Education*, *25*(6), 1039–1046.

Guo, N., & Zhuang, J. (2018). Practice and exploration of “cooperative education” from the perspective of the symbiosis theory. In *7th International Conference on Energy, Environment and Sustainable Development (ICEESD 2018)* (Vol. 163, pp. 29–34). https://doi.org/10.2991/iceesd-18.2018.6

Hendayana, Y. (2020). Ditjen Dikti Dorong Agenda _World Class Professor_ untuk Meningkatkan Kualitas Publikasi dan Pengembangan Teknologi – Direktorat Jenderal Pendidikan Tinggi Kementerian Pendidikan dan Kebudayaan Republik Indonesia. Retrieved March 17, 2021, from https://dikti.kemdikbud.go.id/kabar-dikti/kabar/ditjen-dikti-dorong-agenda-_world-class-professor_-untuk-meningkatkan-kualitas-publikasi-dan-pengembangan-teknologi/

Hill, Y., Lomas, L., & Macgregor, J. (2003). Students’ perceptions of quality in higher education. *Quality Assurance in Education*, *11*(1), 15–20. https://doi.org/10.1108/09684880310462047

Hormiga, E., Batista-Canino, R. M., & Sánchez-Medina, A. (2011). The Impact of Relational Capital on the Success of New Business Start-Ups. *Journal of Small*

Business Management, *49*(4), 617–638. https://doi.org/10.1111/j.1540-627X.2011.00339.x

Imran, M., Raziq, A., Khaliq, M., & Saleem, H. M. N. (2019). The Influence of Total Quality Management and Export Market Orientation on company export performance of Furniture Industry in Pakistan: A moderating role of Business Network. In *Third International Conference On Economics Education, Economics, Business and Management, Accounting and Entrepreneurship (PICEEBA 2019)* (Vol. 97, pp. 499–516). https://doi.org/10.2991/piceeba-19.2019.56

Islam, R., Ghani, A. B. A., Kusuma, B., & Theseira, B. B. (2016). Education and human capital effect on Malaysian economic growth. *International Journal of Economics and Financial Issues*, *6*(4), 1722–1728.

Jardon, C. M., & Martos, M. S. (2012). Intellectual capital as competitive advantage in emerging clusters in Latin America. *Journal of Intellectual Capital*, *13*(4), 462–481. https://doi.org/10.1108/14691931211276098

Kanji, G. K. (1996). Implementation and pitfalls of total quality management. *Total Quality Management*, *7*(3), 331–343. https://doi.org/10.1080/09544129650034882

Kucharčíková, A., Tokarčíková, E., & Blašková, M. (2015). Human Capital Management – Aspect of the Human Capital Efficiency in University Education. In *Procedia - Social and Behavioral Sciences* (Vol. 177, pp. 48–60). https://doi.org/10.1016/j.sbspro.2015.02.332

Laursen, K., Reichstein, T., & Salter, A. (2011). Exploring the Effect of Geographical Proximity and University Quality on University–Industry Collaboration in the United Kingdom. *Regional Studies*, *45*(4), 507–523. https://doi.org/10.1080/00343400903401618

Lee, S. J., & Ngo, T. H. (2012). Riccardo Viale and Henry Etzkowitz (eds): The capitalization of knowledge: a triple helix of university-industry-government. *Higher Education*, *63*(1), 161–163. https://doi.org/10.1007/s10734-011-9427-x

Leonidou, L. C., Barnes, B. R., & Talias, M. A. (2006). Exporter-importer relationship quality: The inhibiting role of uncertainty, distance, and conflict. *Industrial Marketing Management*, *35*(5), 576–588. https://doi.org/10.1016/j.indmarman.2005.06.012

Lepak, D. P., & Snell, S. A. (2002). Examining the human resource architecture: The relationships among human capital, employment, and human resource configurations. *Journal of Management*, *28*(4), 517–543. https://doi.org/10.1016/S0149-2063(02)00142-3

Lessing, A., & Schulze, S. (2004). Lecturers' experience of postgraduate supervision in a distance education context. *South African Journal of Higher Education*, *17*(2), 159–168. https://doi.org/10.4314/sajhe.v17i2.25309

Lim, L. L. K., Chan, C. C. A., & Dallimore, P. (2010). Perceptions of Human Capital Measures: From Corporate Executives and Investors. *Journal of Business and Psychology*, *25*(4), 673–688. https://doi.org/10.1007/s10869-009-9150-0

Mahliza, F., Nugroho, L., & Ali, A. J. (2020). Antecedents and Consequences of Muslim Millennials Attitude Towards Halal Personal Care Products. *IKONOMIKA*, *5*(2), 249–270. https://doi.org/10.24042/febi.v5i2.7203

Marti, J. M. V. (2004). Social capital benchmarking system: Profiting from social capital when building network organizations. *Journal of Intellectual Capital*, *5*(3), 426–442. https://doi.org/10.1108/14691930410550381

Medsker, G. (1994). A review of current practices for evaluating causal models in organizational behavior and human resources management research. *Journal of Management*, *20*(2), 439–464. https://doi.org/10.1016/0149-2063(94)90022-1

Meissner, P., & Wulf, T. (2014). Antecendents and effects of decision comprehensiveness: The role of decision quality and perceived uncertainty. *European Management Journal*, *32*(4), 625–635. https://doi.org/10.1016/j.emj.2013.10.006

Milliken, F. J. (1987). Three Types of Perceived Uncertainty about the Environment: State, Effect, and Response Uncertainty. *Academy of Management Review*, *12*(1), 133–143.

Mondal, A., Kumar Ghosh, S., Mondal Santanu Kumar Ghosh, A., Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2012). Intellectual capital and financial performance of Indian banks. *Article in Journal of Intellectual Capital*, *13*, 132–151. https://doi.org/10.1108/14691931211276115

Mtawa, N. N., Fongwa, S. N., & Wangenge-Ouma, G. (2016). The scholarship of university-community engagement: Interrogating Boyer's model. *International Journal of Educational Development*, *49*(April), 126–133. https://doi.org/10.1016/j.ijedudev.2016.01.007

Muhammad, S. (2016). Pentingnya Pengembangan Budaya Organisasi pada Perguruan Tinggi. *Jurnal Ilmiah Widya*, *4*(April), 1–23.

Murias, P., de Miguel, J. C., & Rodríguez, D. (2008). A composite indicator for university quality assesment: The case of Spanish higher education system. *Social Indicators Research*, *89*(1), 129–146. https://doi.org/10.1007/s11205-007-9226-z

Nir, A. E., & Sharma Kafle, B. (2013). The effect of political stability on public education quality. *International Journal of Educational Management*, *27*(2), 110–126. https://doi.org/10.1108/09513541311297487

Nugroho, L., Hidayah, N., Badawi, A., & Mastur, A. A. (2020). The urgency of Leadership in Islamic Banking Industries Performance. In *The 1st Annual Conference Economics, Business, and Social Sciences* (pp. 1–7). https://doi.org/10.4108/eai.26-3-2019.2290681

Nugroho, L., Husnadi, T. C., Utami, W., & Hidayah, N. (2017). Maslahah and Strategy to Establish a Single State-Owned Islamic Bank in Indonesia. *Tazkia Islamic Finance and Business Review*, *10*(1), 1–17.

Paoloni, P., Cesaroni, F. M., & Demartini, P. (2019). Relational capital and knowledge transfer in universities. *Business Process Management Journal*, *25*(1), 185–201. https://doi.org/10.1108/BPMJ-06-2017-0155

Rad, A. M. M. (2006). The impact of organizational culture on the successful implementation of total quality management. *TQM Magazine*, *18*(6), 606–625. https://doi.org/10.1108/09544780610707101

Rahayu, Y. S. (2011). Kualitas Jasa Dan Kepuasan Mahasiswa Perguruan Tinggi Swasta Di Malang. *Iqtishoduna*, *3*(2). https://doi.org/10.18860/iq.v3i2.250

Ramírez, Y., & Gordillo, S. (2014). Recognition and measurement of intellectual capital in Spanish universities. *Journal of Intellectual Capital*, *15*(1), 173–188. https://doi.org/10.1108/JIC-05-2013-0058

Secundo, G., De Beer, C., Schutte, C. S. L., & Passiante, G. (2017). Mobilising intellectual capital to improve European universities' competitiveness: The technology transfer offices' role. *Journal of Intellectual Capital*, *18*(3), 607–624. https://doi.org/10.1108/JIC-12-2016-0139

Stephen M. Nowlis, & Simonson, I. (1996). The Effect of New Product Features on Brand Choice. *Academy of Management Review*, *33*(1), 36–46.

Sudirman, A. (Acai), Alaydrus, S. (Syafika), Rosmayati, S. (Siti), Syamsuriansyah, S. (Syamsuriansyah), Nugroho, L. (Lucky), Arifudin, O. (Opan), … Rijal, K. (Khairul). (2020). *Perilaku Konsumen Dan Perkembangannya Di Era Digital*. Widina Bhakti Persada Bandung. Retrieved from www.penerbitwidina.com

Sukmana, Y., & Jatmiko, B. P. (2019). Sri Mulyani: Anggaran Pendidikan 20 Persen dari APBN Hasilnya Tak Memuaskan... Retrieved March 17, 2021, from https://money.kompas.com/read/2019/08/09/162702626/sri-mulyani-anggaran-pendidikan-20-persen-dari-apbn-hasilnya-tak-memuaskan

Utami, W., Nugroho, L., Mappanyuki, R., & Yelvionita, V. (2020). Early Warning Fraud Determinants In Banking Industries. *Asian Economic and Financial Review*, *10*(6), 604–627. https://doi.org/10.18488/journal.aefr.2020.106.604.627

Utami, W., Wahyuni, P. D., & Nugroho, L. (2020). Determinants of Stock Liquidity:

Forward-Looking Information, Corporate Governance, and Asymmetric Information. *Journal of Asian Finance, Economics and Business*, *7*(12), 795–807. https://doi.org/10.13106/JAFEB.2020.VOL7.NO12.795

Vodenko, K. V., & Lyausheva, S. A. (2020). Science and education in the form 4.0: public policy and organization based on human and artificial intellectual capital. *Journal of Intellectual Capital*, *21*(4), 549–564. https://doi.org/10.1108/JIC-11-2019-0274

Wahyudin, D., & Suwirta, A. (2020). Politics of Curriculum in the Educational System in Indonesia. *Tawarikh*, *11*(April), 143–158. Retrieved from http://www.journals.mindamas.com/index.php/tawarikh/article/view/1307

Wang, X., Shi, H., & Zhang, Q. (2017). Dynamic Capability and Path Dependent. In *2nd International Seminar on Education Innovation and Economic Management* (Vol. 156, pp. 346–350).

Zhou, C. (2008). Emergence of the entrepreneurial university in evolution of the triple helix. *Journal of Technology Management in China*, *3*(1), 109–126. https://doi.org/10.1108/17468770810851539