THE IMPACT OF PRODUCTION PLANNING ERRORS ON WOOD FLOOR PRODUCTION EFFICIENCY

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Authors

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- Introduction;
- Aim and methodology;
- Research results;
- Conclusion;

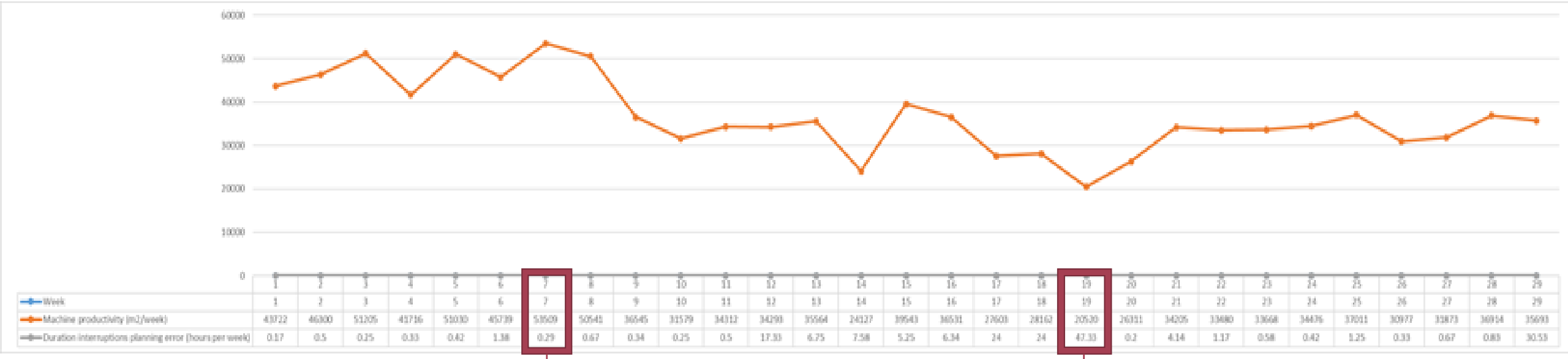
INTRODUCTION

- Productivity is affected by numerous factors. Factors can be divided in two groups, internal and external;
- The problem of quantification external factor on productivity, represent one of the important problems;
- Demands of customers, represent one of the external factors, which influence productivity that can be measured;
- As production planning service is in direct connection with sales service, and its production plans are based on data that are obtained from sales service, a correlation between customers and productivity can be noticed;

AIM AND METHODOLOGY

- The main aim of this paper is to show researching results about the influence of production planning mistakes on productivity of wood flooring, in a selected company;
- The purpose of this paper is to consider the influence of production planning mistakes on productivity, making appropriate conclusions, and giving expert recommendations to solve these problems in practice;
- For the needs of this paper, the technique of field research in the selected companies was used.
- Data was collected for a period of 29 weeks.
- For the purpose of processing collected data, statistical methods, correlation and regression were used.

RESEARCH RESULTS



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Machine productivity (m2/week)	43722	46300	51205	41716	51030	45739	53509	50541	36545	31579	34312	34293	35564	24327	39543	36531	27603	28162	20520	26351	34205	33880	33668	34476	37011	30977	33873	36914	35693
Duration interruptions planning error (hours per week)	0.17	0.5	0.25	0.33	0.42	1.38	0.29	0.67	0.34	0.25	0.5	17.33	6.25	7.58	5.25	6.34	24	24	47.33	0.2	4.14	1.17	0.58	0.42	1.25	0.33	0.67	0.83	30.53

The higest productivity
Week: 7
Machine productivity [m2/week]: 53 509
Duration interruptions planning error [hours per week]: 0.29

The lowest productivity
Week: 19
Machine productivity [m2/week]: 20 520
Duration interruptions planning error [hours per week]: 47.33

Figure 1. Impact of the level of productivity of the selected machine on the duration of production interruptions on a weekly basis

RESEARCH RESULTS

Table 1. Results of correlation analysis of the impact of production interruptions caused by errors in the production planning phase on the level of productivity of the selected machine

Correlations

		Machine_productivity	Duration_interruptions_planning_error
Pearson Correlation	Machine_productivity	1.000	-.505
	Duration_interruptions_planning_error	-.505	1.000
Sig. (1-tailed)	Machine_productivity	.	.003
	Duration_interruptions_planning_error	.003	.
N	Machine_productivity	131	29
	Duration_interruptions_planning_error	29	29

RESEARCH RESULTS

Table 2. Results of regression analysis - Model Summary[b]

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.505[a]	.255	.227	9040.318

a. Predictors: (Constant), Duration_interruptions_planning_error

b. Dependent Variable: Machine_productivity

Table 3. Results of regression analysis – *ANOVA method*

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	755600271.046	1	755600271.046	9.245	.005[b]
	Residual	2206638328.259	27	81727345.491		
	Total	2962238599.306	28			

a. Dependent Variable: Machine_productivity

b. Predictors: (Constant), Duration_interruptions_planning_error

Table 4. Results of regression analysis - *Coefficients*

Model		Unstandardized coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	41077.565	1927.745		21.309	.000	37122.16	45032.97					
	Duration_interruptions_planning_error	-454.629	149.518	-.505	-3.041	.005	-761.41	-147.84	-.505	-.505	-.505	1.000	1.000

a. Dependent Variable: Machine productivity

The linear mathematical model of the impact of production interruptions caused by errors in the production planning phase on the level of productivity of the selected machine, in the observed production system, is presented by equation (1):

$$y = 41\,077{,}565 - 454{,}63\,x \qquad (1)$$

CONCLUSION

- Based on the results of research presented in this paper, it can be concluded the total productivity of parquet production in the selected company largely depends on the duration of production interruptions due to errors in the production planning phase, which are mostly caused by changes in customer demands.

- The main recommendation would be to strive to reduce errors in the production planning phase, which would significantly contribute to increasing the productivity of the selected machine and production plant as well as the production of this company.

- While collecting data for the preparation of this paper, the errors that were observed and that significantly affect production interruptions, which should be eliminated in order to increase productivity in the observed company, are: reducing the addition of new quantities of parquet to already created work orders, following the order of creating work orders and increasing the size of the series.

THANK YOU

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