Correlation between background education, willingness to invest into new technology, and success factors of heavy-duty transportation: crane rental business in Samut Sakhon, Thailand

Yingsak Vanpetch[1] and *Mahachai* Sattayathamrongthian[2*]

[1]Suan Sunandha Rajabhat University, 1 U-Thong Nok rd., Dusit, Bangkok, Thailand, 10300
[2]Rajamangala University of Technology Rattanakosin, 96 Moo 3, Phutthamonthon Sai 5, Salaya, Phutthamonthon, Nakhon Pathom, Thailand, 73170

Abstract. This research aims to observe and analyze Correlation between Background Education, Willingness to invest into New Technology, and Success Factors of Heavy-Duty Transportation: Crane Rental Business in Samut Sakhon. This research applies the quantitative research method, purposive sampling, the data was collected using reviewed questionnaire. The questionnaire dived into 3 parts: Demographic of the business operators, business background information and perception of the business operators toward future investment. Data collected from 120 crane rental business owner, or management team with least five years-experience in crane renal business. All educational background is positively related. There is no significant correlation between background education and year in business, size of the business and total employee. There is significant correlation between year in business, size of the business and total employee. The respondents agree to invest of all aspect in business. There is significant positive correlation between willingness to invest on human resources management and year in business. There is significant positive correlation between willingness to invest on management technology and total employee. Keywords: willingness to Invest, heavy-duty transportation, crane rental business.

1 Introduction

Samut Sakhon Province is a seaside province, located on the banks of the Tha Cheen River and the mouth of the Gulf of Thailand, located in the Lower Central Region of Thailand. It is located in Bangkok metropolitan province, located about 30 kilometers from Bangkok along the highway. It has an area of 872.347 km²(Samut Sakhon provincial office, 2021). Currently, the population according to the Civil Register of Samut Sakhon Province as of August 31, 2021 totals 585,685 people (Samut sakhon provincial office, 2021).

Heavy-Duty Transportation in this study refers to the business that provide heavy duty truck with to move construction material like asphalt, tools, or rubble from one location to

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*Correspondent author: mahachai.sat@rmutr.ac.th

another (saloodo.com, 2020). Crane rental business is related to general industrial plant business, construction business and machinery related business. Crane operators must be trained for at least one year with sufficient knowledge and skills to operate safely. The main task of the truck crane rental business is to use trucks equipped with cranes to lift or move large items.

Samut Sakhon province is the centre of manufacturing industry. There is a steady increase in investments annually. The building materials transportation business is one of the major supply chains that is growing along the way.

Research objective – is to observe and analyze Correlation between Background Education, Willingness to invest into New Technology, and Success Factors of Heavy-Duty Transportation: Crane Rental Business in Samut Sakhon.

2 Literature Review

2.1 Success factors

The researchers apply the year in operation based on concept of business failure rate to define success. Most businesses will fail in their first year of operation and the failure rate will continue to decline, the business, which can operate for more than 5 years, is likely to succeed.

The new business survives its early years vary a lot by sector. In order from highest to lowest five-year survival rates, the sectors are: mining (51.3 percent), manufacturing (48.4 percent), services (47.6 percent), wholesaling and agriculture (47.4 percent), retailing (41.1 percent), finance, insurance, and real estate (39.6 percent), transportation, communications and utilities (39.4 percent), and construction (36.4 percent) (Shane, 2020).

2.2 Demographic of Business Operator

Humans consist of two genders, namely male and female. Several research results prove the positive influence of gender on business success(Soomro, 2019)

Several studies have proven that age determines business success. Age must be used when conducting demographic analysis. Age shows how old a person is. Age can also indicate the level of human maturity. In business, age is seen as the length of time a person takes to live, reach maturity and be successful.

Many studies support that working experience related to business success. Individuals must engage in entrepreneurial processes in order to gain experiential knowledge(Lackéus, 2011), Managerial skills and competences, experience(George Saridakis, 2008) often called 'learning by doing'(Cope, 2000) Entrepreneurship education is driven by experience more than by systematic teaching approaches(Fayolle, 2008).

Education is guiding, giving knowledge and skills to someone through various ways to become intelligent and skilled in a certain period. The period in question can be in years, months or days. (Singh, 2015)showed that education determines business success

2.3 Willingness to invest into new technology

Technology is an essential part of any business success. Business needs to make continuous investments in technology if you want to maintain a competitive edge and stay relevant(winman.com, 2022).Most business operators have good technology literacy and resources, but contexts may lead to different technology adoption with different conditions and business conditions (Sattayathamrongthian & Vanpetch, 2022; Ushakov et al., 2022)

3 Research Method

This research applies the quantitative research method, purposive sampling, the data was collected using reviewed questionnaire. The questionnaire dived into 3 parts: Demographic of the business operators, business background information and perception of the business operators toward future investment. Data collected from 120 crane rental business owner or management team with least five years-experience in crane renal business. G*Power 3 (Faul, 2007)refers to the statistical power analysis program for the social sciences, selecting the proper sample size based on statistical analysis.

Sample size calculated from G power 3.1.9, Pearson correlation, power 0.90, error 0.5, the sufficient sample size must be greater than 93.

Three academics in social science adequately reviewed the questionnaire and approved from IRB Institutional Review Board. The questionnaire was framed on a five-point Likert scale ranging from rating 1 (strongly disagree) to rating 5 (strongly agree) (Toor, 2021: Ushakov et al., 2022a) was used to collect data divided into two parts: the demographic of individuals and business operating. Data were analyzed using the descriptive, Logistic regression, Pearson correlation.

4 Research Result

Table 1. Demographic and business information.

Demographic (120)		Frequency	Percent
Gender	Male	79	65.8
	Female	41	34.2
	Total	120	100
Age	16-30	43	35.8
	31-45	48	40
	46-60	24	20
	more than 60	5	4.2
	Total	120	100
Education	Primary school	27	22.5
	High school	26	21.7
	Vocational school or equivalent	11	9.2
	Undergraduate	53	44.2
	Graduated school or above	3	2.5
	Total	120	100
Location	Close to the community	44	36.7
	On the outskirts of the community	41	34.2
	In a tourist place	5	4.2
	In the shopping mall area	2	1.7
	In the market	4	3.3
	In the area to the main transport routes	24	20
	Total	120	100
Form of operation	Sole proprietor	35	29.2
	Ordinary partnership	22	18.3
	Limited partnership	24	20
	Limited company	19	15.8
	Unregistered	20	16.7
	Total	120	100

Most of the respondents are male, age between31-45, and undergraduate educational background. The business is located close to community, sole propriety.

Table 2. Background information.

	Minimum	Maximum	Mean	Std. Deviation
Age	20	80	37.6167	12.30917
Experience	5	40	8.65	7.96806
Year in Business	5	50	10.8083	10.05556
Size	80	4000	835.9083	632.03441
Employee	2	26	7.3	5.53309
Starting capital	100,000	100,000,000	4,298,333.333	10,381,842

Most respondents had an average age of 37 years, and an average of 8 years of work experience, and an average business operation. 10 years, average business size of 835 square meters, average staffing of no more than 10 people, and large capital investments.

Table 3. Fundamentals of business education.

	N	Mean	Std. Deviation	Significant level
Principle of management	120	3.6667	1.08723	Good
Technology literacy skills	120	3.8083	1.02322	Good
Principle of accounting	120	3.4333	1.098	Good
Financial management	120	3.575	1.12019	Good
Principle of marketing	120	3.5	1.17395	Good

Most respondents have a good educational background.

Table 4. Correlation between background educational, year in business, and Size of the company.

		Principle of management	Technology literacy skills	Principle of accounting	Financial management	Principle of marketing	Year in business	size	exp	capital	employee
Principle of management	Pearson Correlation	1	.682**	.777**	.711**	.691**	.159	.078	.225*	.147	.147
	Sig. (2-tailed)		.000	.000	.000	.000	.084	.397	.013	.110	.110
	N	120	120	120	120	120	120	120	120	120	120
Technology literacy skills	Pearson Correlation	.682**	1	.673**	.661**	.626**	.063	.000	.123	.147	.080
	Sig. (2-tailed)	.000		.000	.000	.000	.492	.999	.182	.109	.385
	N	120	120	120	120	120	120	120	120	120	120
Principle of accounting	Pearson Correlation	.777**	.673**	1	.780**	.763**	.129	.061	.198*	.083	.068

	Sig. (2-tailed)	.000	.000		.000	.000	.159	.505	.030	.370	.458
	N	120	120	120	120	120	120	120	120	120	120
Financial management	Pearson Correlation	.711**	.661**	.780**	1	.674**	.021	-.075	.043	.012	-.016
	Sig. (2-tailed)	.000	.000	.000		.000	.819	.413	.637	.896	.863
	N	120	120	120	120	120	120	120	120	120	120
Principle of marketing	Pearson Correlation	.691**	.626**	.763**	.674**	1	.052	.029	.063	.122	.058
	Sig. (2-tailed)	.000	.000	.000	.000		.570	.755	.495	.186	.528
	N	120	120	120	120	120	120	120	120	120	120
Year in business	Pearson Correlation	.159	.063	.129	.021	.052	1	.855**	.834**	.080	.774**
	Sig. (2-tailed)	.084	.492	.159	.819	.570		.000	.000	.386	.000
	N	120	120	120	120	120	120	120	120	120	120
size	Pearson Correlation	.078	.000	.061	-.075	.029	.855**	1	.693**	.116	.683**
	Sig. (2-tailed)	.397	.999	.505	.413	.755	.000		.000	.205	.000
	N	120	120	120	120	120	120	120	120	120	120
exp	Pearson Correlation	.225*	.123	.198*	.043	.063	.834**	.693**	1	-.029	.627**
	Sig. (2-tailed)	.013	.182	.030	.637	.495	.000	.000		.751	.000
	N	120	120	120	120	120	120	120	120	120	120
capital	Pearson Correlation	.147	.147	.083	.012	.122	.080	.116	-.029	1	.083
	Sig. (2-tailed)	.110	.109	.370	.896	.186	.386	.205	.751		.368

	N	120	120	120	120	120	120	120	120	120	120
employee	Pearson Correlation	.147	.080	.068	-.016	.058	.774**	.683**	.627**	.083	1
	Sig. (2-tailed)	.110	.385	.458	.863	.528	.000	.000	.000	.368	
	N	120	120	120	120	120	120	120	120	120	120

All educational background is positively related. There is no significant correlation between background education and year in business, size of the business and total employee. There is significant correlation between year in business, size of the business and total employee.

Table 5. Willingness to invest on business.

	N	Mean	Std. Deviation	Significant level
5.1 willingness to invest on management technology, such as warehouse management, inventory management	120	3.7833	1.04667	Agree
5.2 willingness to invest on marketing, such as digital marketing	120	3.9167	0.92203	Agree
5.3 willingness to invest on accounting system, such as accounting system management.	120	3.7083	0.97357	Agree
5.4 willingness to invest on financial system such as payment system, money management	120	3.9917	0.93031	Agree
5.5 willingness to invest on human resources management, such as employee data	120	3.8417	1.87418	Agree

The respondents agree to invest of all aspect in business

Table 6. Correlation between Willingness to invest on business, year in business, and Size of the company.

		willingness to invest on management technology	willingness to invest on marketing	willingness to invest on accounting system	willingness to invest on financial system	willingness to invest on human resources	year in business	size	exp	starting capital	Total employee
willingness to invest on management technology	Pearson Correlation	1	.686**	.655**	.447**	.565**	.126	.163	.103	.181*	.187*
	Sig. (2-tailed)		.000	.000	.000	.000	.170	.075	.264	.058	.041
	N	120	120	120	120	120	120	120	120	120	120

willingness to invest on marketing	Pearson Correlation	.686**	1	.600**	.577**	.606**	.049	.077	.082	.085	.059
	Sig. (2-tailed)	.000		.000	.000	.000	.595	.406	.375	.357	.520
	N	120	120	120	120	120	120	120	120	120	120
willingness to invest on accounting system	Pearson Correlation	.655**	.600**	1	.619**	.634**	.092	.131	.044	.200*	.083
	Sig. (2-tailed)	.000	.000		.000	.000	.317	.155	.632	.029	.365
	N	120	120	120	120	120	120	120	120	120	120
willingness to invest on financial system	Pearson Correlation	.447**	.577**	.619**	1	.546**	.019	.069	-.041	.133	.043
	Sig. (2-tailed)	.000	.000	.000		.000	.839	.454	.655	.147	.641
	N	120	120	120	120	120	120	120	120	120	120
willingness to invest on human resources management	Pearson Correlation	.565**	.606**	.634**	.546**	1	.226	-.091	-.153	.105	.027
	Sig. (2-tailed)	.000	.000	.000	.000		.043	.324	.095	.255	.767
	N	120	120	120	120	120	120	120	120	120	120
year in business	Pearson Correlation	.126	.049	.092	.019	.226	1	.855**	.834**	.080	.774**
	Sig. (2-tailed)	.170	.595	.317	.839	.043		.000	.000	.386	.000
	N	120	120	120	120	120	120	120	120	120	120
size	Pearson Correlation	.163	.077	.131	.069	-.091	.855**	1	.693**	.116	.683**
	Sig. (2-tailed)	.075	.406	.155	.454	.324	.000		.000	.205	.000
	N	120	120	120	120	120	120	120	120	120	120
exp	Pearson Correlation	.103	.082	.044	-.041	-.153	.834**	.693**	1	-.029	.627**

	Sig. (2-tailed)	.264	.375	.632	.655	.095	.000	.000		.751	.000
	N	120	120	120	120	120	120	120	120	120	120
starting capital	Pearson Correlation	.181*	.085	.200*	.133	.105	.080	.116	-.029	1	.083
	Sig. (2-tailed)	.048	.357	.029	.147	.255	.386	.205	.751		.368
	N	120	120	120	120	120	120	120	120	120	120
Total employee	Pearson Correlation	.187*	.059	.083	.043	.027	.774**	.683**	.627**	.083	1
	Sig. (2-tailed)	.041	.520	.365	.641	.767	.000	.000	.000	.368	
	N	120	120	120	120	120	120	120	120	120	120

There is significant positive correlation between willingness to invest on human resources management and year in business.

There is significant positive correlation between willingness to invest on management technology and total employee.

5 Conclusion

Most of the respondents are male, age between 31-45, undergraduate educational background. The business is located close to community, sole propriety. Most respondents had an average age of 37 years, and an average of 8 years of work experience, and an average business operation. 10 years, average business size of 835 square meters, average staffing of no more than 10 people, and large capital investments. Most respondents have a good educational background.

All educational background is positively related. There is no significant correlation between background education and year in business, size of the business and total employee. There is significant correlation between year in business, size of the business and total employee.

The respondents agree to invest of all aspect in business. There is significant positive correlation between willingness to invest on human resources management and year in business. There is significant positive correlation between willingness to invest on management technology and total employee.

6 Limitations and Future recommendations

This research only aims to collect data from business operators in Samut Sakhon province. The research team recommends that the future research should collect other local operators, including prominent business representatives or public companies, to understand the outlook of the crane rental business.

Acknowledgments

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