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Investigating the effect of information technology on strategic management: A case study of after sale services

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C H R O N I C L E

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A B S T R A C T

Information technology plays essential role on the success of organizations; it eases the access on information, reduces time on reaching the necessary information and builds a better communication among different groups of an organization. This paper performed an empirical investigation to find the effects of information technology on strategic management in one of Iranian automakers in after sales services in Iranian auto industry. The proposed study designed questionnaire and distributed among some experts and using t-student test examined the effect of information technology on various factors. The study design a questionnaire in Likert scale and distributes it among some experts and using some statistical observation measures the effects of information technology on various factors. The results have confirmed that information technology influenced on strategy execution and control policy.

1. Introduction

Information technology (IT) plays essential role on the success of organizations; it eases the access on information, reduces time on reaching the necessary information and builds a better communication among different groups of an organization. These days, people are more concerned to do their daily activities using the recent advances of information technology (IT) such as online banking activities, ordering products, etc. During the past few years, there have been many studies on measuring the effects of information technology on improving the performance of organizations (Venkatesh et al., 2003). Davis (1989) investigated perceived usefulness, perceived ease of use, and user acceptance of information technology. Naranjo-Gil (2009), for instance, analyzed the role of top management team in the relationship between management information systems and strategic performance. They explained how the impact of management information system on strategic performance was moderated by top management team diversity.

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DeSarbo et al. (2008) presented a framework to integrate different perspectives of the literature on strategic and performance groups and explicitly extracted strategic/performance groups, which exhibited differences with respect to both strategy and performance, as well as display associations and potential interrelationships between the two sets of variables. They provided a new spatial technique to derive strategic/performance groups in any given industry to more completely summarize intra-industry heterogeneity.

Durmusoglu (2009) investigated how sophistication of top management view on IT infrastructure influences the firm's IT infrastructure capability and the effect of IT infrastructure capability on new product development (NPD) process outcomes such as cost, cycle time, and quality. Martinsons (2006) tried to explain the high failure rate of e-commerce ventures. The most important failure factors for e-commerce ventures were detected to include a lack of: a sound business idea, long-term planning, good market knowledge, balanced business development and external relationships. Wang et al. (2006) investigated different issues such as how technology capability influences business performance, whether the linkage between technology capability and business performance depends on specific contexts and why some high-tech firms of strong technological capability fail to reach their objectives.

Azad et al. (2014) performed an empirical investigation to detect important factors influencing information and communication technology (ICT) implementation in Iranian banking industry. The survey applied factor analysis to find important factors using a questionnaire consist of 26 variables and detected six factors influencing ICT including efficiency approach, new advanced technological achievements, human resource management, service strategy, growth strategy and supporting systems.

2. The proposed model

The proposed model of this paper tries to find the effect of information technology on strategic management in one of Iranian automakers. Fig. 1 demonstrates the framework of the proposed study.

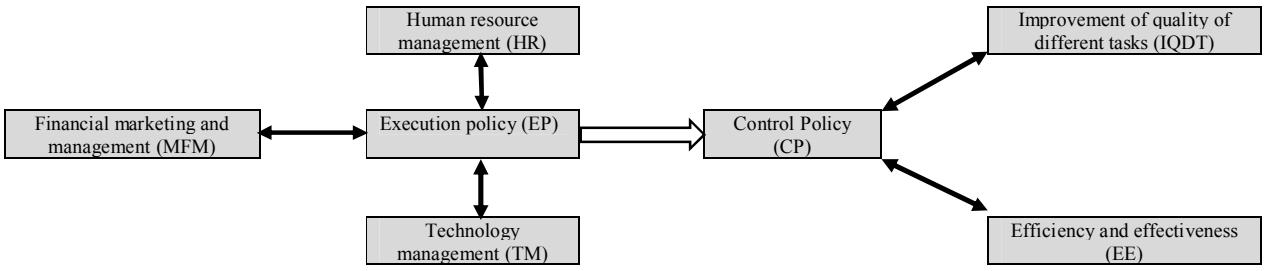

Fig. 1. The proposed model

As we can observe from the results of Fig. 1, execution policy (EP) is assumed to have some relationship with human resource management (HR) as well as technology management (TM). In addition, EP has some relationship with financial marketing and management (MFM). These relationships influence on control policy (CP) and CP has relationship with improvement of quality of different tasks (IQDT) as well as efficiency and effectiveness (EE) of the system. In summary information technology (IT) in this model is considered in two phases of control and execution. The study designs a questionnaire consists of 30 questions and distributes it among some experts. Cronbach alpha has been calculated as 0.77, which validates the overall survey. Table 1 summarizes the feedback received from the surveyed people.

Table 1
The summary of responses to questions

	Very low	Low	Average	High	Very high	Mean	Standard deviation
Q1	0.00	4.35	8.70	71.74	15.22	3.98	0.65
Q2	0.00	15.22	50.00	28.26	6.52	3.26	0.80
Q3	0.00	4.35	43.48	47.83	4.35	3.52	0.66
Q4	0.00	19.57	30.43	41.30	8.70	3.39	0.91
Q5	4.35	8.70	41.30	32.61	13.04	3.41	0.98
Q6	2.17	19.57	47.83	28.26	2.17	3.09	0.81
Q7	0.00	15.22	30.43	41.30	13.04	3.52	0.91
Q8	0.00	0.00	8.70	41.30	50.00	4.41	0.65
Q9	0.00	4.35	10.87	43.48	41.30	4.22	0.81
Q10	0.00	10.87	28.26	41.30	19.57	3.70	0.92
Q11	0.00	2.17	19.57	43.48	34.78	4.11	0.80
Q12	4.35	28.26	19.57	34.78	13.04	3.24	1.14
Q13	0.00	2.17	21.74	39.13	36.96	4.11	0.82
Q14	0.00	0.00	8.70	56.52	34.78	4.26	0.61
Q15	2.17	17.39	17.39	36.96	26.09	3.67	1.12
Q16	0.00	2.17	13.04	52.17	32.61	4.15	0.73
Q17	0.00	2.17	17.39	56.52	23.91	4.02	0.71
Q18	2.17	17.39	23.91	52.17	4.35	3.39	0.91
Q19	0.00	4.35	15.22	65.22	15.22	3.91	0.69
Q20	0.00	0.00	39.13	34.78	26.09	3.87	0.81
Q21	0.00	0.00	30.43	60.87	8.70	3.78	0.59
Q22	2.17	28.26	28.26	41.30	0.00	3.09	0.89
Q23	4.35	10.87	32.61	34.78	17.39	3.50	1.05
Q24	0.00	15.22	21.74	58.70	4.35	3.52	0.81
Q25	0.00	8.70	26.09	56.52	8.70	3.65	0.77
Q26	0.00	4.35	32.61	43.48	19.57	3.78	0.81
Q27	0.00	13.04	26.09	36.96	23.91	3.72	0.98
Q28	0.00	0.00	19.57	58.70	21.74	4.02	0.65
Q29	0.00	2.17	21.74	50.00	26.09	4.00	0.76
Q30	0.00	4.35	17.39	50.00	28.26	4.02	0.80

Next, we present details of our findings on testing the effects of information technology on various factors shown in Fig. 1.

3. The results

In this section, we present details of our findings on testing various components of our survey.

3.1. The first question: The effect of information technology on strategy execution

The first question of the survey investigates whether information technology has any influences on strategy execution in terms of different perspectives of human resources (HR), marketing and financial management (MFM), technology management (TM) and execution policy (EP).

3.1.1 The effect of information technology on human resources (HR)

The first hypothesis of this survey investigates the effect of information technology on human resources in terms of strategy execution. Table 1 summarizes some basic statistics on our survey.

Table 1
The summary of some basic statistics

	N	Mean	Std. Deviation	Std. Error Mean
HR	46	3.4420	.40554	.05979

In addition, Table 2 demonstrates the results of testing the effect of information technology on human resources. As we can observe from the results of Table 2, t-student is statistically significance with α=5%, which means information technology influences on human resources in terms of strategy execution.

Table 2
The summary of testing the effect of information technology on human resources (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HR	7.393	45	.000	.44203	.3216	.5625

3.1.2. The effect of information technology on marketing and financial management (MFM)

The second hypothesis of this survey studies the effect of information technology on marketing and financial management in terms of strategy execution. Table 3 summarizes some basic statistics on our survey.

Table 3
The summary of some basic statistics on marketing and financial management

	N	Mean	Std. Deviation	Std. Error Mean
MFM	46	3.8659	.59069	.08709

Besides, Table 4 shows the results of testing the effect of information technology on marketing and financial management in strategy execution. As we can observe from the results of Table 4, t-student is statistically significance with α=5%, which indicates information technology influences on marketing and financial management in terms of strategy execution.

Table 4
The summary of testing the effect of information technology on marketing and financial management (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
MFM	9.943	45	.000	.86594	.6905	1.0414

3.1.3. The effect of information technology on technology management (TM)

The third hypothesis of this survey tries to find the impact of information technology on technology management in terms of strategy execution. Table 5 shows some basic statistics on our survey.

Table 5
The summary of some basic statistics on technology management

	N	Mean	Std. Deviation	Std. Error Mean
TM	46	4.0435	.48610	.07167

Table 6 presents the summary of the results of testing the effect of information technology on technology management. According to the results of Table 6, t-student is statistically significance with α=5%, which means information technology influences on technology management in terms of strategy execution.

Table 6
The summary of testing the effect of information technology on technology management (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TM	14.559	45	.000	1.04348	.8991	1.1878

3.1.4. The effect of information technology on execution policy (EP)

The fourth hypothesis of this survey tries to find the effect of information technology on execution policy. Table 7 presents some basic statistics on our survey.

Table 7
The summary of some basic statistics on execution policy

	N	Mean	Std. Deviation	Std. Error Mean
EP	46	3.7838	.38117	.05620

Table 8 presents the summary of the results of testing the effect of information technology on execution policy. According to the results of Table 8, t-student is statistically significance with α=5%, which means information technology has some positive impact on execution policy.

Table 8
The summary of testing the effect of information technology on execution policy (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
EP	13.947	45	.000	.78382	.6706	.8970

3.2. The effect of information technology on control policy

The second question of the survey investigates the effect of information technology has any influences on control strategy in terms of various perspectives of improvement on quality of different tasks (IQDT) and effectiveness and efficiency (EE).

3.2.1. The effect of information technology on improvement on quality of different tasks (IQDT)

The first hypothesis of this part of the survey attempts to find the effect of information technology on improvement on quality of different tasks (IQDT). Table 9 presents some basic statistics on our survey.

Table 9
The summary of some basic statistics

	N	Mean	Std. Deviation	Std. Error Mean
TM	46	4.0435	.48610	.07167

Table 10 presents the summary of the results of testing the effect of information technology on improvement on quality of different tasks (IQDT). Based on the results of Table 10, t-student is statistically significance with α=5%, which means information technology has some positive impact on execution policy.

Table 10
The summary of testing the effect of improvement on quality of different tasks (IQDT) (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TM	14.559	45	.000	1.04348	.8991	1.1878

3.2.2. The effect of information technology on efficiency and effectiveness

The second hypothesis of this part of the survey attempts to detect the impact of information technology on efficiency and effectiveness. Table 11 presents some basic statistics on our survey.

Table 11
The summary of some basic statistics

	N	Mean	Std. Deviation	Std. Error Mean
TM	46	4.0435	.48610	.07167

Table 12 presents the summary of the results of testing the effect of information technology on efficiency and effectiveness (EE). Based on the results of Table 12, t-student is statistically significance with α=5%, which means information technology has some positive impact on efficiency and effectiveness.

Table 12
The summary of testing the effect of improvement on efficiency and effectiveness (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
EE	11.783	45	.000	.81677	.6772	.9564

3.2.3. The effect of information technology on control policy (CP)

The third hypothesis of this part of the survey attempts to detect the effect of information technology on control policy. Table 13 presents some basic statistics on our survey.

Table 13
The summary of some basic statistics

	N	Mean	Std. Deviation	Std. Error Mean
CP	46	3.7037	.37530	.05533

Table 14 presents the summary of the results of testing the effect of information technology on policy control (PC). Based on the results of Table 14, t-student is statistically significance with α=5%, which means information technology has some positive impact on policy control.

Table 14
The summary of testing the effect of improvement on policy control (Test value = 3)

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CP	12.717	45	.000	.70367	.5922	.8151

4. Conclusion and discussion

Information technology plays essential role on the success of organizations; it eases the access on information, reduces time on reaching the necessary information and builds a better communication among different groups of an organization. This paper performed an empirical investigation to find the effects of information technology on strategic management in one of Iranian automakers in after sales services in Iranian auto industry. The proposed study designed questionnaire and distributed among some experts and using t-student test examined the effect of information technology on various factors. The results have confirmed that information technology influenced on strategy execution and control policy. Table 15 and Table 16 summarize the results of the effect of information technology on various sub-components of the survey.

Table 15
The summary of different sub-components of the survey in terms of execution strategy

HR		MFM		TM	
Employee training	√	Prioritizing investment	√	Technical preparation	√
Job satisfaction	√	Purchasing equipment	√	Optimum usage of technical documents	√
Employee capabilities	√	Inventory control	√	Communication tools	√
IT based on organizational culture	√	Resource management	√	Reduction in time needed to access	√
HR job involvement reduction	√	Optimizing sales figures	√	Ease of access to necessary information	√
Freedom in job execution	√	Advertisements	√		

Table 16
The summary of different sub-components of the survey in terms of execution strategy

Improvement on quality of different tasks		Efficiency and effectiveness	
Improvement in customer	√	Better financial performance	√
Expediting on accomplishment	√	Ease of managers' responsibility	√
Be sure of the correctness of	√	Ease of performance measurement	√
Simplifying the information	√	Optimizing managers' responses	√
Reduction in organizational	√	On time report	√
Possibility of work in distance	√	Measuring efficiency of each	√
		Measuring employees' efficiency	√

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