The role of empowering organization capabilities on efficiency of new product development

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CHRONICLE	ABSTRACT
	This paper presents an empirical investigation on the effects of empowering organizational capabilities on new product-development efficiency improvement and the proposed study is applied in one of Iranian food producers in city of Tehran, Iran. The study considers seven components including technological capabilities, marketing mix capabilities, capabilities for communication with customers, quality of new products, fast entry to market capabilities, customer satisfaction and economic success. The study designs a questionnaire in Likert scale and distributes it among 384 randomly selected people who regularly use different food products. Cronbach alphas for all components of the survey are within acceptable limits and it confirms the overall questionnaire in terms of various questions. The study has used t-student test as well as structural equation modeling to examine different hypotheses of the survey.

1. Introduction

Innovation plays essential role on the success of organizations. Innovation teams are different in terms of team members' proximity, i.e., the degree to which all team members are in direct cooperation over the duration of the project (Tzeng, 2009). The closeness of team members, however, has potentially vital implications for the collaborative working of teams. Hoegl and Gemuenden (2001) presented a teamwork quality and the success of innovative projects. Hoegl and Proserpio (2004) developed and examined hypotheses associated with team members' proximity to the performance-relevant team collaborative processes. They reported that team members' proximity was substantially associated with teamwork quality. For years, there have been different studies on measuring the effects of various factors on product development (Collis, 1994). Abdul Adis and Razli (2009) performed an empirical investigation on factors influencing new product development in Malaysian manufacturing industry. The results indicated that both strategic orientation and marketing strategy could influence on product development process, which was in conflict with other existing studies. They also reported that environmental parameters did not seem to moderate the relationship between strategic orientation and marketing strategy on new product development. Matear et al.

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(2004) studied how three marketing-related sources of advantage could contribute to service firm performance by operationalizing the sources-position-performance framework in a multi-sector sample of service organizations. They found that new service development and brand investment could contribute to the attainment of positional advantage and to performance. Market orientation along with these other sources, may not contribute directly to positional advantage and performance.

2. The proposed study

This paper presents an empirical investigation on the effects of empowering organizational capabilities on new product-development efficiency improvement and the proposed study is applied in one of Iranian food producers in city of Tehran, Iran. The study considers seven components including technological capabilities, marketing mix capabilities, capabilities for communication with customers, quality of new products, fast entry to market capabilities, customer satisfaction and economic success. The study designs a questionnaire in Likert scale and distributes it among some randomly selected people who regularly use different food products. The sample size is calculated as follows,

$$N = Z_{\alpha/2}^2 \frac{p \times q}{e^2},$$
(1)

where N is the sample size, $p = 1 - q$ represents the probability, $z_{\alpha/2}$ is CDF of normal distribution and finally ε is the error term. For our study we assume $p = 0.5, z_{\alpha/2} = 1.96$ and e=0.05, the number of sample size is calculated as N=384. Table 1 demonstrates the summary of Cronbach alpha for different components of the survey.

Table 1
The summary of Cronbach alpha values

Variable	Questions	Cronbach alpha
Technological capability	4	0.65
Capabilities of the marketing mix	3	0.76
Customer Communication Capabilities	3	0.83
New Product Quality	5	0.79
Speed product	3	0.66
Economic success	5	0.84
Customer Satisfaction	5	0.68

As we can observe from the results of Table 1, most components of the questionnaire maintain an acceptable Cronbach values. The proposed study adopts the model originally introduced by Akroush (2012) demonstrated in Fig. 1 as follows,
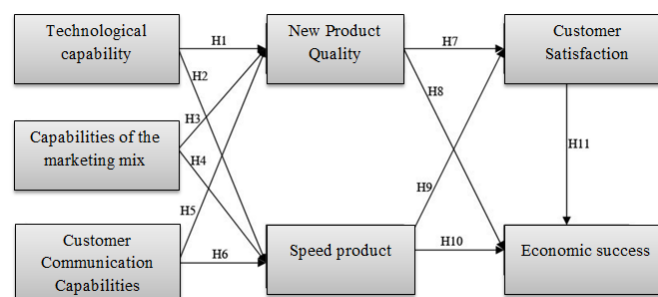

Fig. 1. The proposed study

Table 1 demonstrates the summary of mean and standard deviation, t-student values of the mean difference for the questionnaire of the survey. As we can observe from the results of Table 1, all seven components maintain high mean values and the mean differences are statistically significant. Next, we present details of the results for the implementation of structural equation modeling.

Table 1
The summary of some basic statistics

Variable	Mean	Standard deviation	Mean difference	t-value	Sig.
Technological capability	3.76	0.46	0.75	8.99	0.000
Capabilities of the marketing mix	3.59	0.71	0.59	4.54	0.000
Customer Communication Capabilities	3.51	0.83	0.51	3.38	0.002
New Product Quality	3.79	0.47	0.79	9.22	0.000
Speed product	3.51	0.65	0.51	4.28	0.000
Economic success	3.29	0.61	0.29	2.62	0.014
Customer Satisfaction	3.72	0.39	0.72	9.98	0.000

3. The results

In this section, we present details of the implementation of structural equation modeling. Fig. 2 demonstrates the summary of our findings.
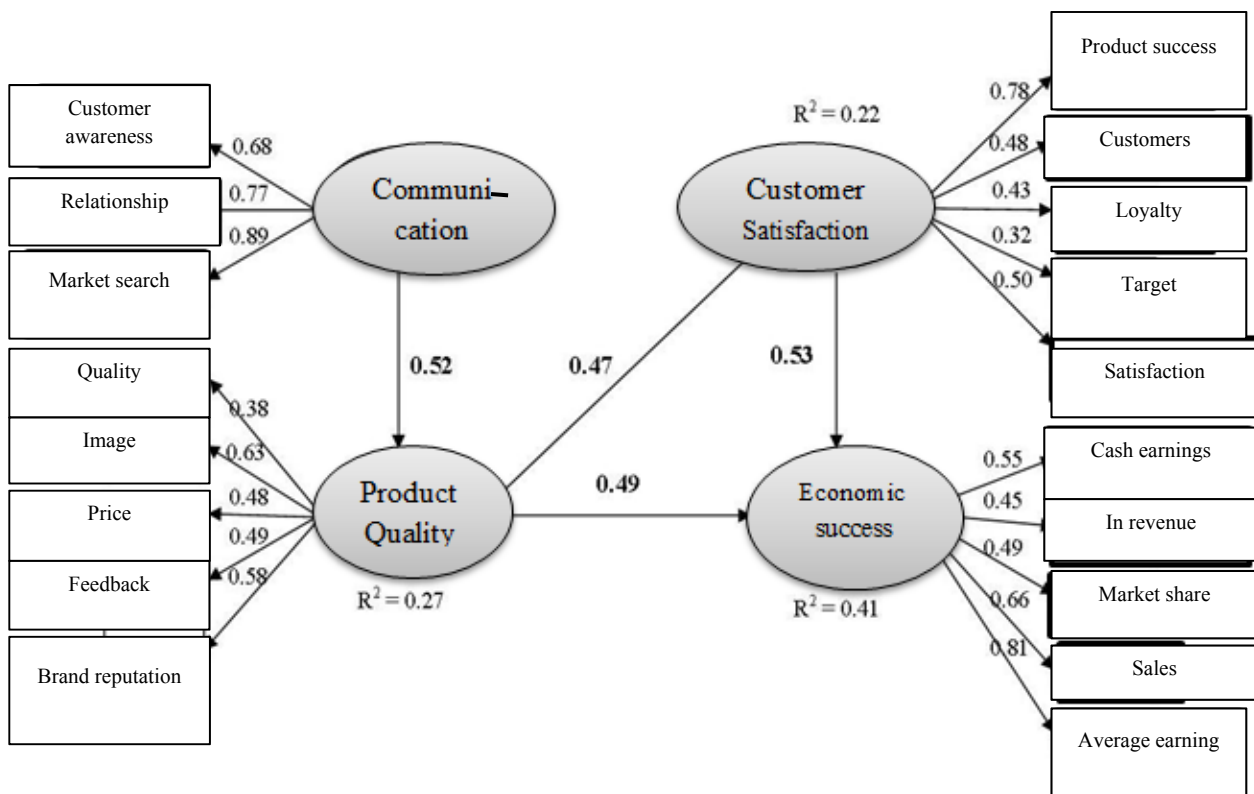

Fig. 2. The results of the SEM implementation

Based on the results of Fig. 2, we may examine various hypotheses of the survey. Table 2 shows details of our findings. Based on the results of Table 2, we can observe that customer relationship management influences on quality of new products ($\beta = 0.52$, t-student = 2.97, Sig. = 0.001). In addition, quality of new product also influences on customer satisfaction, positively ($\beta = 0.47$, t-student = 2.64, Sig. = 0.001) as well as economic success ($\beta = 0.49$, t-student = 2.97, Sig. = 0.001). Finally, customer satisfaction influences on economic success ($\beta = 0.53$, t-student = 3.13, Sig. = 0.001). However, the study does not provide any evidence to believe that technological capabilities have any meaningful effect on quality of new products and speed of market entrance. In addition, marketing capabilities do not have any impact on quality of new products or on speed of market entrance. The study does not find any evidence to specify any meaningful relationship between customer relationship management and speed of market entrance. Finally, speed of market entrance did not have any impact either on customer satisfaction or on economic success. Table 3 presents details of direct and indirect effects of different factors.

Table 2

The results of SEM implementation

Hypothesis	β	t-value	Result
Technological capabilities on quality of new products	0.05	0.65	×
Technological capabilities on speed of market entrance	0.04	0.56	×
Marketing capabilities on quality of new products	0.30	1.76	×
Marketing capabilities on speed of market entrance	0.10	1.10	×
Customer relationship management on quality of new products	0.52	2.97	√
Customer relationship management on speed of market entrance	-0.11	1.11	×
Quality of new product on customer satisfaction	0.47	2.64	√
Quality of new product on economic success	0.49	2.79	√
Speed of market entrance on customer satisfaction	0.08	0.98	×
Speed of market entrance on economic success	0.06	0.73	×
Customer satisfaction on economic success	0.53	3.13	√

Table 3

The summary of direct and indirect effects

Variable	Direct	Indirect	Total
Customer Communication Capabilities	-	0.38	0.38
New Product Quality	0.49	0.25	0.74
Customer Satisfaction	0.53	-	0.53

As we can observe from the results of Table 3, quality plays the most important role followed by customer satisfaction and communication capabilities.

4. Conclusion

In this paper, we have presented an empirical investigation on the effects of empowering organizational capabilities on new product-development efficiency improvement and the proposed study has been applied in one of Iranian food producers in city of Tehran, Iran. The survey has concluded that customer relationship management influences on quality of new products (β = 0.52, t-student = 2.97, Sig. = 0.001). In addition, quality of new product also influences on customer satisfaction, positively (β = 0.47, t-student = 2.64, Sig. = 0.001) as well as economic success (β = 0.49, t-student = 2.97, Sig. = 0.001). Finally, customer satisfaction influences on economic success (β = 0.53, t-student = 3.13, Sig. = 0.001). However, the study does not provide any evidence to believe that technological capabilities have any meaningful effect on quality of new products and speed of market entrance. In addition, marketing capabilities did not have any impact on quality of new products or on speed of market entrance. The study also did not find any evidence on relationship between customer relationship management and speed of market entrance. Finally, speed of market entrance did not have any impact either on customer satisfaction or on economic success.

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