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Identifying the impact of a technology-oriented strategy on the organizational performance of the banking system: Case study Bank Tejarat

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***Abstract*---**The current research was conducted with the objective of identifying the effect of a technology-oriented strategy on the organizational performance of a banking system in Bank Tejarat. Regarding its objective, the present research is an applied study. Also, data collection was survey-oriented and cross-sectional, then the study was of survey-oriented correlational research. The statistical population of the study consisted of 532 Bank Tejarat employees in west Tehran branches. According to the Cochran's formula, 223 subjects were considered as the sample required for a population of 532 subjects. These individuals were selected using simple stratified sampling. For data collection, a standard questionnaire developed by Hao and Song (2015) and Miller (1996) was used. The research instrument validity was evidenced through divergent, convergent and content validities. The research instrument reliability was also verified via Cronbach's alpha coefficient, shared reliability and combined reliability. Data were analyzed using structural equation modeling and SmartPLS software. The results showed that technology-oriented strategy had a positive and significant effect on the organizational performance of the banking system (0.505). Also, both market-based strategy (0.560) and technology-oriented strategy (0.519) had a positive and significant effect on the organization performance.

***Keywords*---**technology-oriented strategy, organizational performance, market-based strategy, technology-oriented strategy.

Introduction

In recent years, the accelerated and incessant flow of events has gradually changed the boundaries, structure, and dynamics of business environments and has increasingly had all institutions face with new, unexpected, and broad-based challenges. By the turn of 21th century, these changes were further accelerated, so that many organizations have faced some sort of confusion for how to cope with the environmental dynamics. Organizational performance is one of the most significant concepts discussed in management research and is undoubtedly the most important success assessment in companies. Today, many of these companies encounter strategic challenges and the economic stagnation, international sanctions, and reduction of revenues have further changed the role of these organizations (Bagheri and Aligoli, 2017).

On the other hand, given the high speed and volume of information flow as well as technology advancement, one of the challenges for organizations today is optimal use of the available facilities; In other words, the principal problem is how organizations will be able to make their utmost use of human resources and IT equipment as the influential factors in the development process. While achieving these objectives, evaluation of the performance of organizations from IT viewpoint makes it possible for the managers of these organizations to control the effectiveness of investment on IT regarding the organization performance (Kashani Nejad and Haghshenas Kashani, 2016). Well known articles most often report narrative evidences that show technological companies are more successful. Indeed, recent studies show that companies that use technology have higher performance and output rates (Eshtiaqh et al. 2020). TO continue their competition in the modern economy, digital developments are essential for organizations. Use of digital development opportunities to transfer their business and operational model from a traditional outlook to an outlook focusing on digital business is essential for continued competition of companies (Regenen et al., 2018). Digital technologies lead to some changes in long established companies and have profound and sustainable after-effects on all aspects of their business. They also shape new business models or reshape the existing ones.

Among these institutions, banks, as service-oriented financial institutions, play a fundamental and stabilizing role in the process of sustainable development. The emergence of new technologies, changes in customer preferences, promotion of open banking, and expansion of diverse financial markets have shaped new conditions in global economy arena (Moghani et al. 1398). On the other hand, with the introduction of Iran's membership to the World Trade Organization (WTO) and arrival of foreign competitors at the country's financial markets and Article 44 of the constitution, the Iranian bankers also need to develop their services in line with technological changes. Then a technology-oriented strategy can lead to the growth and innovation in the company, reduce the time needed for the products to be supplied to the market, and provide early warnings to the company at the time of crisis or disruption in the market. Therefore, according to the abovementioned statements, technology-oriented strategy leads to better performance, and can be a complement to market orientation in the company, and then examining the issue is of great importance (Hao and Song, 2015).

Given the crucial role that technology-oriented strategies play in providing financial services to banks, institutions, financial firms, insurance companies and the stock market, and regarding the fact that one of the fundamental axes of economy, esp. the resisting economy, is the use of new technologies, and on the other hand, one of the sectors the change of which has a direct impact on the country's economic growth is the banking system, and violations and defects in this area not only entangles the banking system customers but also the country's economy, this study is of great significance.

Despite the use of technology-oriented strategies in today's banking system, it has been observed that bankers are not sufficiently satisfied with their performance. In this regard, the factors that can affect bankers' performance needs to be studied. In spite of the importance of adoption of technology-oriented strategies in the performance of organizations, few studies have been conducted in this area and such studies have not been conducted on the country's banking system. Therefore, the impact of such strategies on the performance of the country's banks is not known clearly. In this regard, this study seeks to respond to the question reading, "What is the impact of technology-oriented strategies on the performance of banks?" In addition to improving the bankers' performance, the results of this study can lead to advancement of the country's economy as well as satisfaction of the employees and community.

Theoretical framework of study

Studies show that strategic orientation does not automatically lead to better performance (Zhou and Lee, 2010), but rather it has potential value and requires complementary capabilities to achieve superior performance in the selected strategic direction (Ngo and Okas, 2012). According to a resource-based outlook, a company's competitive advantage is primarily developed by its valuable, scarce, unrepeatable, and irreplaceable resources (Barney, 1991). The strategic management literature pays significant attention to strategic capabilities, which facilitate the effective use of strategic assets (De Bendeto et al., 2008). Unlike assets, capabilities are not observable, they are difficult to measure, and they cannot be easily traded or imitated as they are deeply embedded in organizational routines and practices (Dee, 2011). Researchers emphasize on the vital role of capabilities in the company's efforts to achieve superior performance, and consider the theory of capabilities as an extension of the resource-based outlook. According to the theory of capabilities, strategic capabilities are associated with the development processes and strategy implementation. Strategic orientation reflects the strategies implemented by a company and includes its capabilities (Mangok and Oh, 2006).

As stated earlier, technology-based strategy refers to active development and rapid integration of new technologies as well as use of these technologies in developing new products. A tech company is likely to be technically outstanding in developing superior products and services, and consumers have been said to prefer such products and services (Mayo and Di Bendeto, 2011). Strong emphasis on technology strengthens a company's penetration into new markets and allows a company to supply its products quickly to the market because the technology spares long-standing traditional market research or totally eliminates them. Thus,

technology-based strategy enables the company to develop superior products so as to quickly meet their customers' preferences, which consequently enhances the company's performance. In addition, technology-based companies are often established by technology-focused founding teams that are more likely to be involved in recruiting technical advisory bodies and overcoming technical challenges (Isley et al., 2014). As a result, companies can have improved performance by relying on technical and human capabilities. Based on the given explanations, the research conceptual model is as described in Figure 1:

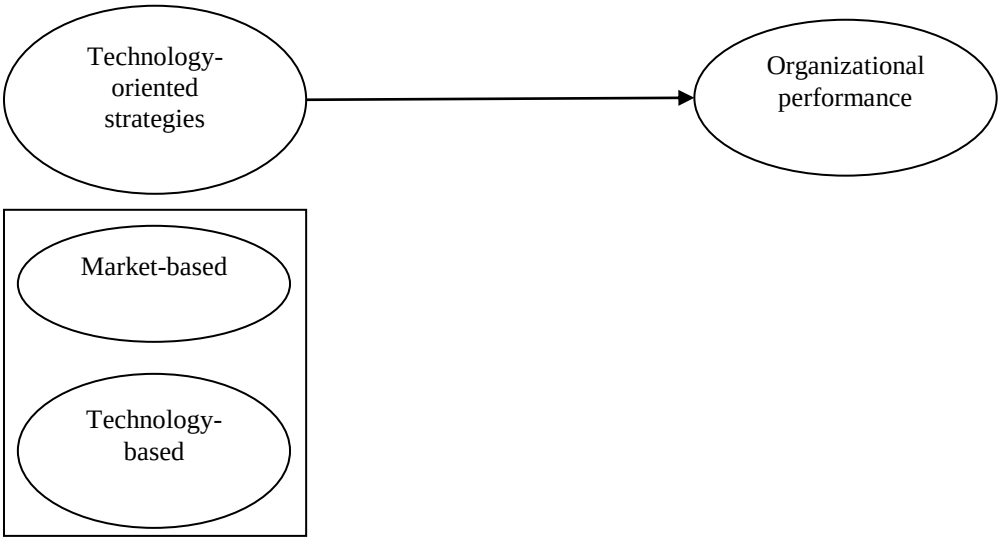

Figure 1. Conceptual model of research, taken from the research of Hao and Song (2015)

Research background

Habibi and Nik Naghsh (1400) in their research "Investigated the impact of market orientation on organizational performance with respect to the mediating role of customer relationship (Case study: Behnoosh Company)". The results of applying structural equations modeling in LISREL software environment, indicated that market orientation directly and indirectly affects the performance of Behnoosh Company through the variable of customer relationship. In their research, Habibi et al. (1400) dealt with "the mediating role of service innovation capability in investigating the effect of market orientation on the organizational performance of Behnoosh Co.". The results of using structural equation modeling in LISREL software environment, showed that marketing directly and indirectly through the service innovation capability variable affects the performance of Behnoosh Company.

In his research, Layeghi (1400) dealt with "Comparative study of market orientation strategy and financial performance (Case study: Manufacturing companies in Guilan province)". After scoring by *t*-test, the test results were analyzed. The findings suggest that there is a significant difference between the financial performance mean of manufacturing companies in Guilan province with

marketing strategy and the financial performance mean of companies without such strategy.

In his study, Taheri Mirghaed (1399) dealt with "Investigating the relationship between the role of information technology with organizational performance (Case study: Lali Municipality)". Study of the results indicated that application of information technology has a positive impact on organizational performance, implying that information technology was able to account for the changes in organizational performance by 48%. In her research, Moloud Pournia (1399) "examined the level of information technology effectiveness in performance of organizations." The results of her study showed that use of information technology in the organization has not been effective on its employees as it has reduced the number of administrative and office staff, but it affected the improvement of administrative services, customer satisfaction, efficiency and effectiveness, improvement of financial performance, profitability, time saving and cost effectiveness.

In their research, Avundak et al. (2021) responded to "How does outsourcing affect job performance in large-scale companies? And what is the mediating role of open technology strategies." The findings of this study showed that the implementation of open technology strategies mediates the relationship between external knowledge sources of scientific partners and indirect partners with commertial performance. In their study, Octavia et al. (2020) dealt with "the effect of e-commerce acceptance on entrepreneurial orientation and market orientation on the business performance of SMEs". The results of data processing showed that there is a significant influence among entrepreneurial orientation, market orientation and e-commerce acceptance on SMEs' commercial performance in southern provinces. In their research, Eshtiaq et al. (2020) dealt with "The effect of integrated technology-based responsive supply chain on operational performance: A case of unstable market". The results showed that the best way to achieve better operational performance was to invest in ICT, which improves integration capabilities associated with operational responsiveness, which in turn, improves operational performance.

In their research, Sumo et al. (2020) addressed "human resource management practices (training and development, performance evaluation, and reward system) as the latent predictors of job performance: Developing a technology-based model." The findings of this study were used for developing a research model for further experimentation. Key findings of this study showed that the three HRMPs (training and development, performance evaluation, and reward system) were the key predictors of job performance that can strengthen or weaken HRMPs-performance relationships. In their research, Rink et al. (2018) addressed the "effect of technology-based interventions on the performance of the freshmen." In this study, two groups were assigned and the results were obtained using ANOVA mean test. The results showed that the groups who used technology-based online training classes had higher academic performance and achievement. In a study to examine "Is e-marketing a source of sustainable business performance?" Sheikh et al. (2018) dealt with "Predicting the role of senior management support in various factors of interaction." Findings showed that superior management support is directly related to using e-marketing and sustainable performance.

Method

The present study was a descriptive-applied and survey research. The statistical population of this study consisted of all employees of Bank Tejarat, West Tehran branches. According to the Cochran's formula for a population of 532 people, 223 people were considered as a sample. These individuals were selected using simple stratified sampling. Bibliothecal methods have been used to collect the data related to the literature and research background, and field method has been utilized for data collection to accept or reject research hypotheses. A closed-item questionnaire was used for data collection. Questionnaire was prepared and set based on the Likert spectrum. The specific information of the research questionnaire was described as in Table 1.

Table 1
Specifications Related to the Specific Questions of the Research Questionnaire

Variable	Dimension	Item	Reference
Technology-oriented strategy	Market-based strategy	1-5	Hao and Song (2015)
	Technology-based strategy	6-10	
Organization performance	-	11-16	Miller (1996)

The opinions of the professors and experts of the pertaining field have been used to assess its face validity. Also, content validity was assessed based on divergent and convergent validity, and construct validity was assessed by use of confirmatory factor analysis test. To evaluate the instrument reliability, Cronbach's alpha coefficient, combined reliability and shared reliability were used. To describe and analyze the data, SPSS23 software was used. Kolmogorov-Smirnov test was also employed for testing data normality. Finally, to investigate the research model and to test the research hypotheses, structural equation modeling and smartPLS software were used.

Results

Description of variables of the study

In Table 2, the descriptive statistics of each of the research variables including mean, standard deviation, skewness and kurtosis were examined.

Table 2
Descriptive Statistics of Variables

Variable	Mean	SD	skewness	Kurtosis
Technology-oriented strategy	3.125	0.655	0.568	1.174
Market-based strategy	2.978	0.734	0.618	1.045
Technology-based strategy	3.327	0.725	0.239	-0.296
Organization performance	3.279	0.593	0.092	0.199

Study of normality of indicators

Normality of research indicators were examined by a single-sample Kolmogorov-Smirnov test.

H0: The examined indicator was normally distributed.
H1: The examined indicator was not normally distributed.

Table 3
A Single-Sample Kolmogorov-Smirnov Test for Research Indictors

Variable	Sig.	Result
Technology-oriented strategy	0.000	not normal
Market-based strategy	0.000	not normal
Technology-based strategy	0.000	not normal
Organization performance	0.000	not normal

As specified from the data on Table 3, significance level of Kolmogorov-Smirnov test for research variables were smaller than .05 and were not normally distributed. Therefore, to analyze the data, PLS software were used, which was not sensitive to data distribution.

Structural equations model

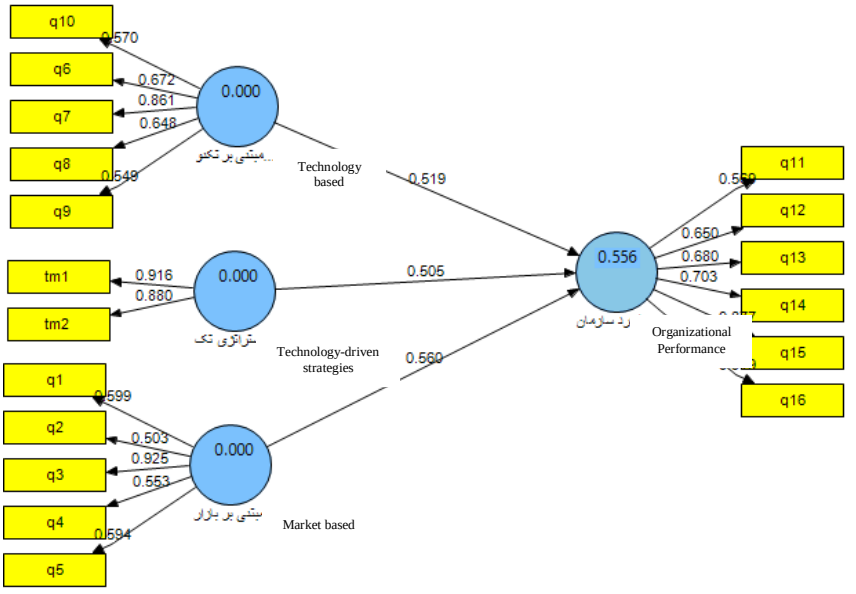

Figure 2. Standard Path Coefficients of Research Hypotheses

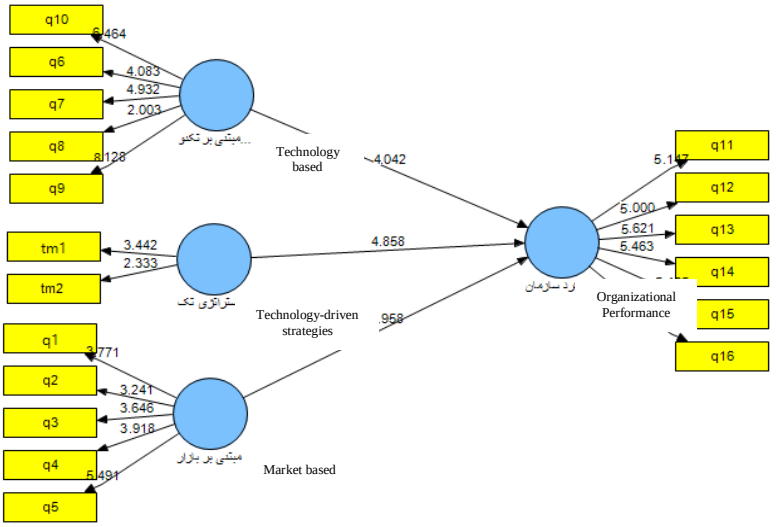

Figure 3. Results of T-Student Test. Significance of Research Hypotheses

Table 4
Factor Load Values, Significance Statistic, Cronbach's Alpha, Combined Reliability and AVE

Structure	*Item*	*Factor load*	*Significance statistic*	*Variance mean (AVE)*	*Combined reliability*	*Cronbach's Alpha*	*Q2*	*R2*
Technology-oriented strategy	*TM1*	*0.916*	*3.442*	*0.552*	*0.712*	*0.732*	*0.233*	
	TM2	*0.880*	*2.333*					
Market-based strategy	*Q1*	*0.599*	*3.771*	*0.596*	*0.815*	*0.778*	*0.287*	
	Q2	*0.503*	*3.241*					
	Q3	*0.925*	*3.646*					
	Q4	*0.553*	*3.918*					
	Q5	*0.594*	*5.491*					
Technology-based strategy	*Q6*	*0.672*	*4.083*	*0.592*	*0.832*	*0.845*	*0.298*	
	Q7	*0.861*	*4.932*					
	Q8	*0.648*	*2.003*					
	Q9	*0.549*	*8.128*					

	Q10	*0.570*	*6.464*					
Organization performance	*Q11*	*0.559*	*5.147*	*0.574*	*0.802*	*0.879*	*0.257*	*0.556*
	Q12	*0.650*	*5.000*					
	Q13	*0.680*	*5.621*					
	Q14	*0.703*	*5.463*					
	Q15	*0.877*	*5.465*					
	Q16	*0.919*	*5.692*					

To evaluate the measurement model, in this study, factor loads, combined reliability and the mean variance of extracted Cronbach's alpha were used. Based on the results of the measurement model placed in Table 4, the standard operating load value of all obvious variables is greater than 0.5 and desirable. On the other hand, for all cases bootstrapping (*t* statistic) was larger than critical *t*-value (1.96), which showed that the correlation between observable variables and their own pertinent latent variables was significant. Therefore, each main variable has been assessed correctly.

For all structures, Cronbach's alpha was above 0.7, which showed a high degree of convergent validity. Also, composite reliability values for all structures were reported to be higher than 0.7, which indicates that the structures have an appropriate combined reliability. Convergent validity was shown when the combined reliability was greater than 0.7 and AVE greater than 0.5. Also, the combined reliability was required to be greater than AVE. In this case, a convergent validity condition would be met. According to Table 4-7, all 3 above-said conditions were met; therefore, the questionnaire had convergent validity.

Divergent validity (cross-tab table)

According to Table 5, all items had their greatest factor load on their own structure and the minimum distance between the factor load related to their own structure was over 0.1, which showed that the research structures had a good divergence validity. Also, in Fornell-Larker's criterion, it has been pointed out that the AVE root of a structure had to be greater than the correlation of that structure with other structures. This indicated that the correlation of that structure with its markers was greater than its correlation with other structures. Table 6 also reported the results of the second criterion.

Table 5
Investigation of cross-sectional load of items on research structures in the sample under study

	Market-based strategy	Technology-based strategy	Organization performance	Technology-oriented

				strategy
Q1	0.656	0.577	0.203	0.295
Q2	0.725	0.421	0.249	0.391
Q3	0.794	0.369	0.267	0.373
Q4	0.669	0.248	0.322	0.371
Q5	0.774	0.311	0.366	0.452
Q6	0.217	0.793	0.674	0.272
Q7	0.383	0.761	0.259	0.348
Q8	0.326	0.659	0.250	0.514
Q9	0.236	0.789	0.691	0.144
Q10	0.230	0.679	0.597	0.291
Q11	0.361	0.518	0.755	0.285
Q12	0.553	0.601	0.828	0.276
Q13	0.506	0.682	0.705	0.539
Q14	0.683	0.501	0.737	0.350
Q15	0.786	0.531	0.806	0.521
Q16	0.804	0.714	0.824	0.356
TM1	0.399	0.404	0.359	0.618
TM2	0.262	0.263	0.138	0.591

Table 6
Correlation coefficients between latent variables and AVE root

	Technology-oriented strategy	Market-based strategy	Technology-based strategy	Organization performance
Technology-oriented strategy	0.552			
Market-based strategy	0.488	0.596		
Technology-based strategy	0.474	0.412	0.592	
Organization performance	0.396	0.436	0.328	0.574

In this study, the AVE root of the latent variables placed in the cells along the main diameter of the matrix was greater than the value of the correlation between the cells placed on the lower and left side of the main diameter; Therefore, this criterion could be considered as acceptable and validity of the appropriate divergence of the model could be confirmed.

Investigation of structural research model

To test the significance of the path coefficients using the bootstrapping method, the values of the *t-student* test were calculated. If the values of *t-Student* test were greater than 1.96, the path coefficient was significant at 0.05 level.

- Dependent variables determination coefficient index (R^2): These three values, 0.19, 0.33 and 0.67, were considered as the criterion values for weak, medium and strong values R^2. The value for the endogenous research structure was calculated to be 0.556.
- Predictive Relationship Index (Q^2): The criterion for interpretation of Q^2 was the three values of 0.02, 0.15, and 0.35 as low, medium and strong predictive powers. If this index is positive, it is desirable. The value of Q^2 for the research variables was 0.233, 0.287, 0.298, and 0.257, which is positive and at the desired level. Accordingly, it can be said that the predictive power of the model about the variables were desirable.
- GOF Index: Using PLS method, structural modeling experts consider GOF index less than 0.1 as small, between 0.1 to 0.25 as medium, and over 0.36 as large. Taking into account these criteria, the fitness index of the sample model was 0.566, which is of large sizes. Given these findings, it can be concluded that the tested model in the sample under study had a good fitness.

Interpretation of research hypotheses

Path coefficients and the results pertaining to their significance were shown in Table 7.

Table 7
Results of structural model evaluation for studying research hypotheses

Path	Path coefficient (β)	Sig. (t-value)	Test result
Technology-oriented strategy affects Organization performance of the banking system	0.505	4.858	Confirmed
Market-based strategy affects Organization performance of the banking system	0.560	4.958	Confirmed
Technology-based strategy affects Organization performance of the banking system	0.519	4.042	Confirmed

Conclusion

The present study was conducted with the objective of identifying the effect of a technology-oriented strategy on the organizational performance of the banking system in Bank Tejarat. Based on the findings of the tested hypotheses, the results of this study were as follows:

The findings from the study of the principal hypothesis of the research showed that the path coefficient value of the effect of technology-oriented strategy on organizational performance was 0.505, namely more than 0.5. Also, the value of significance of this relationship was 4.858, that is higher than 1.96. Accordingly,

it could be concluded that the above relationship was positive and significant. Therefore, it could be concluded that technology-oriented strategy has a positive and significant impact on the organizational performance of the banking system. Accordingly, it can be argued that the more technology-oriented strategies are used by a bank, the better will be its performance. Research has shown the organizations that benefit from technology perform better as compared to other organizations. The reason is that technology allows the organization to strengthen its resources and be able to respond effectively and efficiently to environmental changes. This makes the organization in question perform better than its competitors. In fact, technology makes it possible for the organization to develop new markets by supplying diverse and distinctive products and services to the market. This results in better accountability in response to the customers and improved organizational performance. Meo and Di Bandeto (2011), Habibi et al. (1400), Taheri Mirghaed (1399), Moloud Pournia (1399), Avondak et al. (2021), Eshtiaq et al. (2020) and ... came to similar results in their research.

The findings also showed that the path coefficient value of the effect of market-based strategy on organizational performance was 0.560, namely over 0.5. Also, the value of significance of this relationship was 4.958 that is greater than 1.96. As a result, it can be concluded that the above relationship was positive and significant. Accordingly, it could be noted that market-based strategy had a positive and significant impact on the organizational performance of the banking system. Therefore, it can be argued that the more a bank uses market-based strategies, the better will be its performance. Narrow and Slater (1990) believed that market orientation has been the beating heart of modern management and marketing strategy, and that a business that increases its market orientation will improve its market performance. On the other hand, a market-oriented organization is able to identify the needs and wants of the target market and, as a result, achieves customer satisfaction more efficiently and effectively as compared to its competitors. Thus, a market-oriented organization has further ability to achieve its organizational objectives, such as market share and higher profit, relative to the organizations that are less engaged in market-oriented activities. On the other hand, an organization that acts in line with the market is able to keep its existing customers satisfied and loyal, attract new customers, achieve an acceptable level of growth and market share, and thus obtain an acceptable level of performance. Market orientation is recognized as a source of sustainable competitive advantage and contributes to creation of superior values for their customers by the organization. In this regard, Habibi and Nik Naghsh (1400), Habibi et al. (1400), Layeghi (1400), Octavia et al. (2020), Eshtiaq et al. (2020), Masadeh et al. (2018), Sheikh et al. (2018) and ... achieved similar results in their research.

The path coefficient value of the effect of technology-oriented strategy on organizational performance was 0.519, that is greater than 0.5. Also, the significance of this relationship was 4.042, namely larger than 1.96. As a result, it can be concluded that the above relationship is positive and significant. Accordingly. It could be noted that technology-oriented strategy had a positive and significant impact on the organizational performance of the banking system. Therefore, it could be argued that the more a bank utilizes technology-oriented strategies, the better will be its performance. Businesses can overcome their

uneconomic size through technology so as to survive in the market against larger competitors. By applying technology strategies, businesses will be able to improve their performance and survive in their economic environment by creating a new product or designing a new production method. According to previous studies, businesses that choose to use technology in processes and for products as their strategy create barriers for their competitors to arrive at today's turbulent markets where there is a lot of imitations. In other words, as process technology strategy is implemented in the production lines of the company, that technology is used exclusively by the business and thus causes improvements in its performance. On the other hand, by implementing technology strategy in businesses, the performance of the company will be better as this implementation reduces its costs. It should also be noted that as competition is intensified in an environment, it would be harder for the businesses to proceed towards innovation of their product, and consequently, many companies will produce for the market the products and services that are very similar to each other. This is because in a highly competitive environment, businesses have to work hard and spend huge resources to be able to produce a new product. It should be noted that in the face of intense competition constraint in the market, customers are also very experienced and of high expectations for the product that is to be launched to market. Meo and Di Bandeto (2011), Habibi et al. (1400), Taheri Mirghaed (1399), Moloud Pournia (1399), Wondak et al. (2021), Eshtiaq et al. (2020), Masadeh et al. (2018), etc. achieved similar results in their studies.

In line with the obtained results, it is suggested that the managers of Bank Tejarat periodically evaluate the external environment as well as identify the opportunities in the market. They should also accept the uncertain working conditions and threats in the markets and manage them so as to take advantage of the opportunities in the market while bearing its potential risks. In this regard, it is suggested to utilize SWOT techniques. Finally, the data collection process was very difficult and time-consuming owing to the large size of the sample. It is suggested that the present research be conducted on a larger population of bank employees and include other branches for examination.

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