عنوان مقاله: مدلسازی ساختاری تفسیری استفاده از ابزارهای جدید در کسب و کارهای

مدلسازی ساختاری تفسیری استفاده از ابزارهای جدید در کسب و کارهای مرتبط با فناوری

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چکیده

هدف از این پژوهش، مدلسازی ساختاری تفسیری استفاده از ابزارهای جدید در کسب و کارهای مرتبط با فناوری بود. بنابراین از نظر هدف، یک پژوهش کاربردی است، زیرا علاوه بر جنبه آگاهی و علمی، جنبه کاربردی نیز برای سازمان های مربوطه خواهد داشت. این مطالعه چهار عامل موفقیت حیاتی برای پذیرش فین تک در کسبوکارهای کوچک مبتنی بر فناوری اطلاعات را برجسته می کند: نرخ پذیرش، تجربه کاربر، سفارشی سازی و ادغام. این عوامل به هم مرتبط هستند و به موفقیت کلی ابزارهای فین تک در ارتقای مدیریت مالی کارآمد و مؤثر در مشاغل کوچک کمک می کنند. با تمرکز بر تقویت این عوامل، توسعه دهندگان می توانند راه حلهای کاربرپسند، منعطف و قابل انطباق ایجاد کنند که نیازهای منحصربه فرد کسبوکارهای کوچک را برآورده می کند و در نهایت منجر به نرخ پذیرش بالاتر و به حداکثر رساندن مزایای بالقوه ابزارهای فین تک می شود. واژه های کلیدی: مدل سازی ساختاری تفسیری، کسبوکارهای کوچک و متوسط، کسبوکارهای مرتبط با فناوری

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Interpretive structural modeling of using new tools in technology-related businesses

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Abstract

The purpose of this research was to interpretive structural modeling of using new tools in technology-related businesses. Therefore, in terms of the goal, it is an applied research, because in addition to the awareness and scientific aspect, it will also have a practical aspect for the relevant organizations. this study highlights four critical success factors for fintech adoption in IT-based small businesses: adoption rate, user experience, customization, and integration. These factors are interrelated and contribute to the overall success of fintech tools in promoting efficient and effective financial management in small businesses. By focusing on enhancing these factors, developers can create user-friendly, flexible and adaptable solutions that meet the unique needs of small businesses, ultimately resulting in higher adoption rates and maximizing the potential benefits of fintech tools.

Keywords: Interpretive structural modeling, small and medium businesses, technology-related businesses

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Introduction

The term fintech is an emerging term that is derived from the two words finance and technology and is mainly known as an entrepreneurial phenomenon in the financial services industry using digital technologies.

Fintech or financial technology is the application of science and technology in an innovative way in order to improve the process of carrying out financial operations and developing the related fields of financial services. In general, fintech refers to all businesses that use technology to improve the quality of people's financial lives (Muganyi et al, 2022).

In simple terms, fintech is a tool that can change the way of doing financial affairs and lead to the improvement of financial services. Fintech involves the design and rapid delivery of financial and technological products. These financial institutions affect customers, merchants and financial service providers and industries. Financial technology enables non-traditional payments and quick money exchange and can provide the company's strategic ability to dominate the foreign exchange market and improve the company's financial position.

In fact, fintech is a term to introduce companies that provide modern technology and innovative business models in the field of financial services (Navaretti et al, 2018).

Fintech companies are usually start-up and fledgling companies that, with the help of new technologies and the use of the Internet, perform all services and issues related to financial fields, while maintaining the security and quality of services, with greater speed and transparency and at a lower cost (Zavolokina et al, 2016).

In other words, fintech is a new type of company that has transformed the traditional ways of paying, sending money, borrowing, lending and investing (Sironi, 2016).

According to Akar and Chitak (2019), fintechs are not just tools to make things easier; or their goal is not only to improve the performance of products and services; Rather, their role is to elevate the society to a new level, improve the lifestyle of the people of the world and solve the problems of the people, service owners, industries and producers and fulfill their demands. In addition, in their new projects, fintechs seek to create products and services that respond to people's needs with the participation of people.

According to Son Ryu (2018), fintechs are providers of financial services that have various advantages and disadvantages, the most important advantage of which is ease of use and the creation of added value by them, and the most important disadvantages of which are legal obstacles in using them for banks. Among the active and prominent companies in the fintech fields, we can mention Betterment in the investment field, Prosper in the personto-person lending field, Stripe in the money transfer and payment field, Moven in the personal banking field, and Lemonade in the insurance field.

According to Quintzer et al. (2015), fintechs are companies that provide or facilitate financial services using technology (online channels and mobile phones). Also, fintechs are technology startups and new product market entrants that innovate products and services that are currently provided by the traditional service industry. Therefore, they disrupt the traditional value chain. In general, fintechs are providers of emerging digital technologies.

Fintechs are pure, fast and creative. They are the banks that act as intermediaries between customers; remove and allow people to communicate with each other directly without any intermediary and only through the software or website. Fintech goals are generally divided into three categories. The first goal of fintech is to increase the level of security in providing financial services and to identify and evaluate risks along with the risks that threaten us.

In the following, the reduction of possible costs during financial services is pursued as the second goal of fintech, and finally, facilitating the provision of banking and investment services internationally and removing the obstacles that politically and geographically hinder activities outside the borders of countries. It is the third goal that fintech has in its agenda (Son Ryu, 2018).

Fintech services include new financial products and services, including the provision of improved accounting versions that allow easier use of financial mechanisms. In this way, the added value of services and goods is improved and profitability increases.

Although the traditional systems of financial institutions have digital technology, they are unable to provide more diverse, newer services and attract customers due to the lack of proper use of this technology and the low quality of their systems. In fact, fintechs have been able to attract many customers, accelerate financial transactions and conquer the market of financial institutions to a great extent by using technology correctly. Fintechs have not only penetrated the financial market, but also influenced various industries.

Small and medium-sized enterprises constitute a large part of the economy of developed countries, and are recognized as an essential axis for economic growth, employment, poverty reduction and industrial development. According to the statistics of the Organization for Economic Cooperation and Development, small and medium enterprises comprise more than 95% of the business in the member countries of this organization. The share of these companies in the employment of member countries of Economic Cooperation and Development Organization is

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around 60-70%. In advanced countries such as Japan and Germany, the share of small and medium enterprises in the GDP is more than 50%, and in developing countries such as Thailand, it is 38% (Terungwa, 2012).

Despite the importance of the sector of small and medium enterprises, the available evidence indicates that these enterprises still do not have enough access to financial services and products. In surveys conducted worldwide, including the survey of the World Bank, small and medium enterprises have stated that their biggest obstacles to growth and prosperity are the cost of financing and access to it. Although the severity of these restrictions is greater in developing countries, they are considered important obstacles to growth in almost all countries of the world. In low-income countries, almost half of the small and medium-sized companies have stated that financing problems have severely limited them.

Small and medium enterprises have an urgent need for banking services; Because it lacks the necessary liquidity for large investments, large companies cannot easily access the capital markets and often lack personnel with the necessary qualifications to carry out their financial activities. Therefore, these companies can increase their investments by receiving long-term facilities from banks without losing their ownership share. In addition, short-term facilities and working capital also help the gradual growth of these companies. Finally, transaction products and bank deposits can improve their operational efficiency and enable them to outsource their financial activities.

Methodology

According to the purpose and nature, this research is a mixed research (qualitative-quantitative) in terms of method. Also, since this research aims to design the model, it is exploratory. The approach of the qualitative part was theme analysis, which was done by interviewing experts.

The qualitative part of the research included interviews with experts, so the intended statistical population consisted of experts familiar with the subject of the research (university professors in the field of information technology). In this section, sampling was done theoretically. In theoretical sampling, events are sampled, not necessarily people. If people are also referred to, the main and key goal is to explore events. Although there is no specific rule for sample size in qualitative strategy, 6 to 8 units for homogeneous groups and 12 to 20 units for heterogeneous groups are suggested.

Sampling was done in the framework of the logic of the qualitative method and purposefully. Two methods of targeted and snowball sampling were used in sampling. Usually, in qualitative researches, in order to obtain the most information, purpose-based sampling is used, so the researcher chose the participants who were so-called "rich in information". It means that based on the principle of qualitative research, samples were selected that presented a strong picture of the phenomenon under study. The selection of the participants was done based on the purposeful sampling method of experts in the field of study in the university who were also willing to be interviewed.

Results

Steps of AHP analysis hierarchy

All calculations related to the hierarchical analysis process are based on the decision maker's initial judgment, which appears in the form of a pairwise comparison matrix, and any errors and inconsistencies in the comparison and determination of importance between options and indicators are the final result obtained from the calculations. distorts the inconsistency rate is a tool that specifies compatibility and shows how much the priorities resulting from the comparisons can be trusted. Maybe comparing two options is a simple matter, but when the number of comparisons increases, it is not easy to ensure the compatibility of the comparisons, and this confidence should be achieved by using the compatibility rate. Experience has shown that the compatibility of the comparisons is acceptable if the inconsistent rate is less than 0.10, and otherwise the comparisons should be revised. In this research, SuperDecision software version 2 was used for hierarchical analysis.

Table 1: weight of the main criteria of the research

Dimension	Fundamental Success Factors	Performance Metrics	Operational Aspects	Technical Enablers	Business Strategy	End Goals
Fundamental Success Factors	1	3	5	7	5	5
Performance Metrics	1/3	1	3	5	3	3

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Operational Aspects	1/5	1/3	1	3	3	3
Technical Enablers	1/7	1/5	1/3	1	2	2
Business Strategy	1/5	1/3	1/3	1/2	1	1
End Goals	1/5	1/3	1/3	1/2	1	1

Fundamental Success Factors are relatively most important since they form the basis of successful implementation and usage. Compared to these, Performance Metrics are somewhat less crucial but still essential to measure effectiveness. Operational Aspects like regulation and collaboration come next because they influence daily operations, followed closely by Technical Enablers like data analytics and scalability. Finally, Business Strategy and End Goals hold equal importance as they represent the ultimate objectives of implementing new financial technology tools.

Table 2: Weight of Variables

Dimension	Normalized Weight	
Fundamental Success Factors	0.456	
Performance Metrics	0.147	
Operational Aspects	0.099	
Technical Enablers	0.071	
Business Strategy	0.071	
End Goals	0.155	

We see that Fundamental Success Factors carry the highest significance, followed by Performance Metrics and End Goals. These rankings indicate that focusing on core factors and measuring progress along those lines is vital when considering the success of new financial technology tools. While operational aspects, technical enablers, and strategy remain important, they are secondary to fundamental factors and performance measurements

- Quantitative phase analysis

In this section, the method of factor analysis and structural equations should be used to check and validate the extracted components. In the following, each of the mentioned cases will be examined.

- Quantitative Demographic Statistics

Table 3: Education of participants in the quantitative section

	Number	Percent
Bacelor	60	56
Master	35	34
PHD	22	10
All	117	100

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According to the above table, people with bachelor's education have the highest frequency with 60%.

Table 4: The work experience of the participants in the quantitative section

	Number	Percent
Less than 5 years	26	24
Between 5 and 15	45	40
15-20	29	25
Over 20 years old	17	11
Total	117	100

Table 5: Gender of participants in the quantitative section

	Number	Percent
Male	81	65
Female	38	35
All	117	100

According to the table above, male gender has the highest frequency with 65%.

- Final Model

First, the research tool prepared based on 20 research components was examined and evaluated by confirmatory factor analysis.

Table 6: Results of KMO test and Bartlett test

KMO	chi-square Bartlett	Significance
0.856	0.992	0.0001

If the table shows significant indicators of the data, the value of the KMO index for research tools is close to one. Also, according to the value of Bartlett's statistic (which is an approximation of the chi-square statistic) and the value of the significant coefficient which was less than 5%, it shows that factor analysis is suitable for identifying the structure of questionnaires and the number of samples selected for factor analysis of the tool It is sufficient.

In the next step, construct validity has been selected to check the accuracy and importance of indicators, which shows whether the indicators have been identified. To investigate this issue, t-values are used, if they are greater than 1.96 or less than -1.96, at the 95% confidence level, the indicators are properly identified and to measure the studied dimensions., they are proper.

Confirmatory factor analysis (measurement model) actually investigates whether the selected questions provide appropriate factor structures to measure the studied dimensions. In confirmatory factor analysis, the closer the factor loading is to one, it actually indicates that the questions of the questionnaire have a stronger relationship with the underlying variables, and if the factor loading is zero, this means that there is no relationship between the questionnaire question and the underlying variable. Is. A negative factor load means that the direction of the effect of the questionnaire question on the latent variable is reversed. A factor loading value smaller than 0.4 or the absolute value of the t statistic value less than 1.96 should be removed from the model. The results of the confirmatory factor analysis to identify the components of the researcher-made questionnaires have been shown.

Table 7: The results of confirmatory factor analysis to confirm the validity of the instrument

	Factor	T	
	ractor		Result
1	0/56	4/65	confirm
2	0/68	3/22	confirm
3	0/58	3/69	confirm
4	0/49	3/96	confirm
5	0/63	4/33	confirm
6	0/66	4/23	confirm
7	0/67	4/37	confirm
8	0/58	4/26	confirm
9	0/74	3/77	confirm
10	0/69	3/48	confirm
11	0/49	3/55	confirm
12	0/69	3/59	confirm
13	0/66	3/68	confirm

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14	0/67	4/66	confirm
15	0.59	4/74	confirm
16	0/57	4/89	confirm
17	0/53	4/36	confirm
18	0/57	4/23	confirm
19	0/59	4/25	confirm
20	0/63	4/11	confirm

Based on the results of the table, it is clear that all the indicators of the studied structures have the necessary importance for measuring their structures due to the t-statistic value being greater than 1.96 and also the values of factor loadings being greater than 0.4. are correctly identified.

Three criteria of reliability, convergent validity and divergent validity are used to examine the fit of measurement models.

Reliability: Reliability or trustworthiness determines how much the measurement tool has the same results when implemented in the same conditions. Reliability is done by three methods: factor loading coefficients, Cronbach's alpha coefficients and composite reliability.

Convergent Validity: The second criterion for evaluating measurement models is convergent validity, which examines the correlation of each factor with its questions. The AVE criterion indicates the average variance shared between each factor and its questions.

Discriminant Validity:

Divergent validity is the third criterion for assessing the fit of measurement models, which covers two issues:

- A) Comparing the degree of correlation between the questions of one factor with that factor versus the correlation of those questions with other factors (Cross Loading.
- b) Comparing the degree of correlation of a factor with its questions against the correlation of that factor with other factors.

Discussion

The findings of the research showed that one of the dimensions of the new tools of financial technology (Fintech) in small businesses based on information technology is operational aspects, and its components include (regulations, cooperation, security, competition).

New financial technology (FinTech) tools have become increasingly common in modern society and have revolutionized various aspects of business activity, especially in small businesses. Understanding the operational aspects of these emerging technologies is essential for entrepreneurs looking to tap into their full potential. This paper examines the dimensions of the operational aspects of fintech in small businesses and provides empirical evidence showing its components, namely regulation, cooperation, security and competition. It then analyzes the theoretical contributions of these findings before comparing them with seminal work in the fintech field.

Regulation shapes the landscape in which fintech operates, dictating procedures, standards, and permissible boundaries. Regulatory compliance requires strict adherence to applicable laws, rules, and guidelines, requiring extensive familiarity with industry-specific rules. Compliance failures often lead to severe consequences, from monetary penalties to reputational damage, thereby jeopardizing long-term sustainability prospects. Hence, understanding regulatory regimes forms an integral part of any prudent strategy adopted by small businesses leveraging fintech solutions.

Collaboration refers to partnerships formed between established institutions and start-up ventures with the aim of optimizing mutual benefits through shared expertise, resources or distribution channels. Collaborative arrangements typically manifest themselves in joint product development initiatives, mutual marketing campaigns, or joint services, reflecting symbiotic relationships based on creating synergies. Collaboration offers promising ways to capitalize on the inherent strengths of each partner while reducing constraints.

Security underpins the integrity of fintech architectures and protects sensitive data from unauthorized intrusion, manipulation or theft. Security breaches often cause cascading disasters, diminishing customer trust, compromising confidential information, and exposing vulnerabilities that can be exploited by adversaries. Therefore, it is important to prioritize security measures in maintaining core functions while protecting end users from imminent threats.

Competition naturally emerges as start-ups compete for market share alongside traditional players, intensifying competition amid heightened stakes. Competitors try to differentiate themselves through product differentiation strategies, price wars, advertising gimmicks or after-sales service. Survival depends on sustained innovation with significant improvements over common alternatives, forcing participants to constantly evolve lest obsolescence occur.

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The competitiveness section draws inspiration from the resource-based perspective and argues that competitive advantages arise from unique resources that confer characteristics that are rare, valuable, non-substitutable, and non-imitable (Barney, 1991). Previous researchers have widely discussed the various aspects attributed to FinTech deployment in small businesses. For example, Arner et al. (2016) proposed three categories of regulatory and regulatory responses to fintech developments, namely "wait and see", "monitor and respond" and "embrace and actively promote". These classifications correspond directly to our regulation component and show similarities in conceptual framing.

Furthermore, Armstrong and Hagendorf (2017) emphasized the dual role that regulators take on as advocates of the public interest and advocates of technological advancements. Such ambivalence reflects the cooperative tendencies observed in practice, where officials balance competing priorities while mediating conflicts arising from differing interests.

Regarding security, Çavuşoğlu et al. (2004) advocated integrated information risk management approaches capable of predicting, preventing, detecting, responding to, and recovering from cyber attacks targeting vulnerable assets. This systematic approach directly addresses the security concerns raised earlier, and represents a convergence in thought leadership around recommended best practices for securing digital platforms.

Regarding competition, Chatterjee (2017) asserted that disruptive innovations from FinTech have profound implications for traditional players in the face of paradigm shifts that challenge established orthodoxies. Incumbent companies face increasing pressures to remain agile, flexible and adaptable amid rapidly changing conditions characterized by dynamic markets characterized by intense competition.

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