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Designing a digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems in Mellat Bank using a mixed method (qualitative analysis and structural equations)

Marine Tahmasian, Kiumars Arya*, Saber Khandan Alamdari

Faculty of Management and Accounting, Roudehen Branch, Islamic Azad University, Roudehen, Iran

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Abstract

Digital transformation in the banking industry is possible through a complete study of customer experience, identification of needs and design of new banking services along with the creation and development of the business ecosystem. In this research, an attempt has been made to identify actors and factors affecting Bank Mellat's business ecosystem by using a mixed method through 200 questionnaires and in-depth interviews with 15 experts using the snowball sampling method and finally, its effect on improving experience and satisfaction. Check customers. After determining the structural model, data and information were analyzed by extracting in three stages by thematic analysis method (open coding, axial coding and selective coding) with Max Kyuda software (2018), and finally, according to the interviews, the components of the digital transformation of banking services and Improvement of customer experience and satisfaction have been extracted. The results indicate that the digital banking business ecosystem centered on the bank includes 8 internal actors of the ecosystem (customers, support centers, alternative channel providers, business partners, insurance organizations, data providers, advertising agencies, start-ups and fintech (and 9 external actors of the ecosystem (financial and government institutions, digital market, infrastructure providers, developers of emerging digital technologies, research and educational centers and institutions, competitors, shareholders, investors) and a total of 100 The index is effective.

Keywords: digital transformation, digital banking, digital customer experience, customer satisfaction, business ecosystem
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1 Introduction

The world has been amazed by the rapid advances in technology over the past few decades. Technologies have affected everything and anything humans can perceive. There are countless cases of technology creating and changing life and business. One of these cases is the banking business. The penetration of digital technology into the field of

*Corresponding author
Email addresses: mtahmasiyan@yahoo.com (Marine Tahmasian), kiumarsarya@hotmail.com (Kiumars Arya), sabersum@yahoo.com (Saber Khandan Alamdari)

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banking has created a paradigm shift in banking, what is known as digital banking today [14]. Banks offer a variety of digital banking channels such as ATMs, internet banking, mobile banking, and digital banking kiosks to provide the best services to customers with the expectation of increasing profitability and reducing operating costs [22]. On the other hand, digital transformation covers all aspects of financial and credit activity, including bank management mechanisms, so the digital transformation of the banking sector must be aligned with other development strategies to create solutions that contribute to maximum efficiency. Digital transformation is achieved through a thorough study of the customer experience, analysis of existing needs and identification of new needs. It is the consumers of banking services who are the driving force behind the innovative development of banks, as they form the requirements of modern banking products and services by expressing their needs [21]. On the other hand, the business ecosystem is the concept of configuration of people, and technology, common in the formation and value proposition that connects internal and external service systems. This definition is closely related to the value chain and value network concept, which describes the tangible (such as goods, services, and income) and intangible (such as knowledge and intangible value) transactions between different organizations and links between organizations and customers. Business ecosystems with features such as the existence of many actors, dependence between components, collaborative evolution, dynamism and flexibility, the simultaneous existence of two concepts of competition and cooperation and shared destiny and help in creating innovations and business successes were identified [8].

Digital transformation is a huge opportunity for the financial sector. Digital transformation helps financial companies in attracting customers, retaining and generating income. Digital transformation has made customer relationship management very important for banks due to increased competition and reduced customer loyalty. Banks must earn the highest level of trust to retain existing customers, acquire new customers, build true loyalty and maximize customer lifetime value. Digital technologies help banks provide customer knowledge and customized targeting, maintaining products and remote communications throughout the day [10]. In the last few decades, banks have made huge investments in technology to reduce their costs and improve the customer experience. The use of technology such as digital banking in service innovation to meet customer needs is best understood through communication with service users and how they perceive the service [4]. Digital banking is the transformation of all traditional banking activities and services into a digital environment. Digital banking technology includes innovation in financial services for customers and business customers in the fields of mobile, digital, artificial intelligence and payment strategies, reg technology, data, and blockchain. API is distribution channels and technology [24]. Landtechs are fintech companies that provide facility payment services without intermediaries. Landtechs replace traditional financial service providers (banks). Landtechs operate without the need for physical locations, with lower overhead costs than traditional facilitators. It also provides access to unique categories of risks that facilitators would otherwise not have access to. Due to their agility and small size, they can penetrate markets that are less used by traditional banks [12]. According to the definition of the Investopedia website, a business ecosystem is a network of organizations including suppliers, distributors, customers, competitors, and government agents that participate in providing specific products or services through competition or cooperation. Each entity in the ecosystem affects and is affected by other components; In this way, connections are created in the ecosystem that continuously evolve and the entities must be flexible and adaptable to survive in it [11]. According to Fallah and his colleagues, the business ecosystem has different characteristics, by reviewing the theoretical background of this concept, characteristics such as the existence of many actors, dependence between components, collaborative evolution, dynamism and flexibility of the simultaneous existence of the two concepts of competition and cooperation and fate are shared. and help in creating innovations and commercial successes were recognized [8].

The digital business ecosystem refers to the two main levels of the digital ecosystem and the business ecosystem. The digital ecosystem refers to a virtual environment that is populated by digital entities such as software applications, hardware, and processes. The business ecosystem Digital serves as a peer-to-peer distributed technology infrastructure that creates, distributes, and connects digital services over the Internet. A digital business ecosystem is defined as a social and technical environment of people, organizations and digital technologies with collaborative and competitive relationships to create value through shared digital platforms [23].

Pidun et al. in [19] stated that there are generally two basic types of business ecosystems that can be observed in practice. Solution ecosystems, which coordinate different participants to create or provide a product or service, and exchange ecosystems that connect participants in a two-way market through a (digital) platform. Digital financial services ecosystems consist of four main actors, all of which work together to achieve the goals of financial inclusion and the stability and integrity of financial systems. The components of this ecosystem are market users, market service providers, ITC infrastructure, and the government [18]. By studying and reviewing the banking research conducted in the last few years, it becomes clear that developments such as the digital revolution, the increase in the penetration rate of the Internet, smartphones, the entry of venture capitalists and accelerators in the path of

digital business development as well as the development of the ecosystem In recent years, digital banking businesses have greatly affected the way digital services are provided. To be empowered to survive in a digital world, to meet the increasing expectations of customers and also to develop their products and services, banks must operate in the business ecosystem, and if banks do not react to new conditions, they risk losing contact with customers. They will face a decrease in bank brand support and a decrease in profitability. Despite the mentioned necessities, we see that many banks are facing numerous political and legal, economic, technological, social and cultural obstacles in the digital banking business ecosystem. Also, despite the development of a limited theoretical background in the field of digital banking business ecosystem development, despite the scattered views in this field and the placement of previous studies in the initial stages of consensus regarding the digital business development model and how its dimensions are related among researchers and experts. It has not been done and as a result, each researcher has investigated several dimensions and limited factors in his own opinion, and research that provides a comprehensive look at digital banking in a comprehensive business ecosystem, identifies key players and factors affecting this ecosystem and finally Investigating the impact of the mediating role of the business ecosystem on increasing satisfaction and improving the digital experience of customers has not been considered. As a result of this research, examines the existing gaps and tries to answer the following questions to achieve the main goal of the research:

A) Who are the actors of the digital banking business ecosystem?

B) What are the key factors affecting the digital banking business ecosystem by players?

2 Theoretical foundations and backgrounds

Digital transformation is changes and transformations that are created and built based on digital technology. In a company, digital transformation is defined as an organizational change in big data, analytics, cloud computing, mobile and social media platforms. While organizations are constantly evolving in response to the changing business landscape, digital transformation is the changes built on digital technologies that bring unique changes to business operations, business processes and work and creation to create value [17]. Therefore, digital technologies can help to achieve competitive advantage by transforming the organization in order to use existing core competencies or develop new competencies [28]. Digital transformation and business model innovation have fundamentally changed consumer expectations and behaviour, putting pressure on traditional companies and disrupting many markets. Consumers have access to dozens of media channels, actively and effortlessly communicating with other companies and consumers, and in this customer journey, they pass through an increasing number of touch points, many of which are digital [15]. Banking Digital has become a main way to provide multi-channel services to customers through telephone, internet and mobile phone, which challenges traditional banking models. [6] have become digital mainstream, making them critical to the survival of banks, through the benefits of convenience, and anytime, anywhere access to services [27]. These technologies enable banks to develop services for customers and reduce costs related to sending bills by post and face-to-face transactions with customers in branches. Today, customers expect similar levels of interactions in digital banking and social media [7].

The business ecosystem is beyond the types of industries. Companies develop their capabilities around innovation. In fact, they work collaboratively and competitively to support new products, satisfy customer needs, and ultimately incorporate the next round of innovations. Every business ecosystem develops in four distinct stages: birth, expansion, leadership, self-renewal, or death [16]. Digital business ecosystem refers to the two main levels of digital ecosystem and business ecosystem [25]. Digital ecosystem refers to a virtual environment created by digital entities such as software applications Software, hardware, and processes are populated. A digital business ecosystem acts as a peer-to-peer distributed technology infrastructure that creates, distributes, and connects digital services over the Internet [23].

In [2], Anggraeni, et al. published the research results under the title of factors influencing the customer in the use of digital banking, in which factors such as habit, price value, performance expectation, social impact, employment behaviour from the customer's perspective were mentioned.

Castro et al. in [5] in research on the topic of understanding the evolution of the fintech ecosystem through service innovation and the technical-social system perspective to the role of fintech startups, government and legislation (laws in the field of tax reduction, financial incentives), traditional financial institutions, financial customers and technology developers were mentioned as factors affecting the development of fintech ecosystem. Lee and Shin in their research [14] on how digital banking creates innovative services and products described digital banking activities such as cash deposits, withdrawals and transfers, bill payments, Account management and services, application for financial products, loan management, portfolio management, investment in financial services using tools such as bank cards (debit/credit cards or prepaid) supplementary service data without USSD structure Active payment system, mobile

wallet payment interface, prepaid bank cards, point of sale terminals, internet banking, mobile bank, micropayment ATMs.

In a research in [20] under the title of digital business ecosystem, Ramezani and his colleagues emphasized the background of the subject and its shortcomings such as creating a comprehensive framework that shows the combination of various components in the heart of the comprehensive set. Subramaniam et al. in a research in 2019 with the topic of reviewing the state of competition in digital ecosystems investigated the impact of digital ecosystems on new sources of value creation and ways of company growth [26].

3 Research methodology

The research method in this research is of an applied type, and in terms of the goal, it is of an analytical type, and in terms of the process, it is part of quantitative (structural equations) and qualitative research, and the method of data collection and analysis is part of theme analysis (theme analysis). in the quantitative part: the research is descriptive in terms of practical purpose and in terms of collecting survey data, and among the types of survey research, the statistical population of the research includes all active employees of Mellat Bank in the field of service design and digital banking and ecosystem development. There are 420 related companies in Tehran. For sampling, the available sampling method and Cochran's formula were used, and the sample size was calculated to be 200 people.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{d^2} - 1\right)}. \tag{3.1}$$

First, based on the findings of the theoretical foundations and background of the research, he designed a questionnaire, and then to obtain the reliability of the questionnaire, an initial random sample of 30 people was selected and using Cronbach's alpha test (calculated as 0.96), the reliability of the questionnaire Made by a researcher, it has been measured. Cronbach's alpha was generally calculated using the following equation.

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} S_i^2}{\sigma^2}\right) \tag{3.2}$$

in these relationships, k is the number of questions, the variance of the i-th question, the variance of the total number of questions, the average variance between the questions, and the average variance of the questions.

After confirming the reliability and validity of the questionnaire, it has been distributed among the entire sample population. Considering the maximum variance (success and failure equal to 0.05) and the limit error of 0.05, the number of 200 people has been estimated as a statistical sample. In order to measure the validity of the researcher's questionnaire, the opinions of academic experts have been used. Their shared opinion on the items was based on the validity of the target measure.

3.1 How to use the structural equation model

The main idea in the structural equation model is the effect of addition and multiplication on numbers. As you have read in the article about mean and variance, we know that if all values are multiplied by a fixed number (such as k), their average will be multiplied by the same value. That is, if we have $y = kx$, then we will have $\overline{y} = \overline{kx}$. Also, the variance of the converted numbers is also in k2 will be multiplied, which means we can write:

$$\sigma_y^2 = k \times 2\sigma \times 2x \tag{3.3}$$

Accordingly, the following relationship holds for the standard deviation of the transformed data:

$$s_y = |k| \times s \times x. \tag{3.4}$$

The point that is used here is to assume that there is a linear relationship between Y and X in the form of Y=4X. As a result, the variance of Y must be 16 times the variance of X. By imagining the reverse of this situation, by comparing the variance of Ys with 16 times the variance of Xs, we can test the appropriateness of the Y=4X model according to the data. This idea can be applied to multiple correlated variables in a group of linear models. Although in this case, the number of calculations and selected models are many, but the basis of the work will be the same. "Checking the existence of a linear relationship between variables can be turned into checking their variance and covariance." There are various statistical methods to investigate such work that analyze the structure of the "Variance-Covariance Matrix". In this way, the SEM method is implemented in the following steps:

1. Related and correlated variables are introduced in the model. This may be done by a route diagram.
2. Based on the data, it is determined how much of the relationship between the variables can be analyzed through the variance and covariance of the variables.
3. With the help of the hypothesis test, it is determined to what extent the selected model in part 1 is statistically significant.
4. The results of the statistical hypothesis test and the coefficients or parameters of the model are determined.
5. Based on this information, it is determined whether the data can be interpreted by the model or whether the model or new variables should be introduced.

3.2 Qualitative method

First, interviews were conducted with 15 experts and experts, and theoretical foundations and previous research were also used. The analysis of the interview texts was done in open, central and selective coding stages. According to the theoretical foundations of the method, theme analysis is a process of going back and forth between the steps of the method in this research as follows: Step 1. Getting to know the data: because the researcher with depth, and to get to know the range of content of the data, it is necessary to immerse oneself in them to some extent. Immersion in data usually involves "repeatedly reading the data" and reading the data actively (i.e. looking for meanings and patterns); At this stage, the researcher tries to find a correct understanding of the content of the subjects and also the theoretical literature of the subject by re-reading the texts several times and making a back and forth movement between the contents and to create maximum compatibility between the contents. Step 2. Creating sub-themes: The second step starts when the researcher has read the data and got familiar with them. This step includes creating subtopics from the data. Subtopics introduce a feature of the data that seems interesting to the analyst. Thematic data are different from the units of analysis (themes). These subtopics are actually concepts and meanings that are hidden in a sentence or a paragraph, and the researcher identifies them by carefully studying the theoretical literature and trying to answer the research questions. Theme creation can be done manually or through software programs; In this research, the researcher created themes manually. At first, the texts of the interviews were summarized, and then by writing notes on the summarized texts or by colouring with pencils, the sub-topics were determined and then they were summarized with the data that the sub-topics were. show data matching and finally the summarized texts were arranged in the form of sub-themes; For this purpose, the researcher analyzed the implemented text sentence by sentence and paragraph by paragraph summarized the interviews, and wrote the desired sub-theme at the end of each meaningful sentence or paragraph, he made the thematic of the interviews. Step 3. Searching for themes: This step includes categorizing different sub-themes in the form of sub-themes and sorting all the thematic data summaries in the form of sub-themes. In fact, the researcher starts his analysis of sub-topics and considers how different topics can be combined to create a general theme. In this stage, the researcher has formed sub-themes by classifying sub-themes close to each other in one category. What is important in this stage is the integration between the sub-themes and the sub-themes, and both of these are based on theoretical foundations that the researcher moves back and forth between data and theoretical foundations to solve this problem. Step 4. Revision of themes: The fourth step begins when the researcher creates a set of themes and reviews them. This stage includes two stages of reviewing and refining the themes. The first stage includes a review at the level of thematic summaries. In the second stage, the validity of the themes of the data set is considered. If the theme map works well, then you can move on to the next step. However, if the map does not match the data set well, the researcher should go back and continue their thematization until a satisfactory theme map is created. At the end of this stage, the researcher should have sufficient knowledge of what the different themes are, how they fit with each other, and the whole story they tell about the data. After the analysis of the interview texts, the researcher re-examined all the sub-themes as well as the sub-themes of payment to make sure of the unity and thematic sequence between them; The researcher kept this point in mind so that the sub-themes and sub-themes counted were to answer the research questions, which was a positive answer.

Step 5. Defining and naming the themes: The fifth step starts when there is a satisfactory map of the themes. In this stage, the researcher defines and revises the themes presented for analysis, and then analyzes the data inside them; By defining and reviewing, the nature of what a theme is discussing is determined and it is determined which aspect of data each theme contains. At this stage, the researcher tried to define the relationship between different sub-themes by categorizing the sub-themes into the main ones; This back-and-forth movement between different sub-themes as well as multiple revisions of research questions and objectives allowed the researcher to get closer to the design of the final research model and provide the items needed for the quantitative test. Step 6. Preparing the report: The sixth step starts when the researcher has a set of well-known themes. This stage includes final analysis and report writing. The manifestation of this stage in this research is the conceptual model that is at the end of the work; In this research, in fact, after thematics were made and the sub-topics were divided into sub-topics and sub-topics into main topics, the

researcher answered the research questions based on this process. The questions raised for interviewing the experts in this research were as follows: Which are the actors that make up the digital business ecosystem? How is the digital transformation model of banking services through studying and examining the business ecosystem? What are the key factors affecting the digital transformation model of banking services through the business ecosystem? What are the key factors affecting the improvement of customer experience and satisfaction in digital transformation models? Based on the obtained results, what payment policy options are offered to National Bank? Validity and reliability in the current research is based on the criteria of credibility or believability, review by members (interviewees), triangulation of data sources, analysis of negative cases and transferability. The above criteria are considered as reliability to replace the validity and reliability of qualitative research.

4 Research findings

4.1 Quantitative research findings

In the quantitative part of the research, several 200 completed and perfect questionnaires were collected from the sample, the frequency distribution of the statistical sample of the quantitative part according to demographics is shown in Table 1, also to check the validity of the questionnaire from confirmatory factor analysis and to check The structural equation modelling method (SEM) was used in the research with the help of SmartPLS 3 software.

Table 1: Frequency distribution of the statistical sample of the quantitative part according to demographics

Percent	Abundance	Variable levels	Variable	Percent	Abundance	Variable levels	Variable
22.5	45	Masters		34.0	68	Female	
77.5	155	Masters and Ph.D	education	66.0	132	Man	gender
100.0	200	total		100.0	200	total	
12.0	24	Less than 30 years		23.5	47	3 to 10 years	
30.5	61	31 to 40 years		40.5	81	11 to 20 years	
34.5	69	41 to 50 years	Age	33.5	67	21 to 30 years	Years of service
23.0	46	51 years and more		2.5	5	30 years and above	
100.0	200	Total		100.0	200	Total	

Table 2: The results of the Kolmogorov-Smirnov test to check the normal or non-normal distribution of the data

P-value	Statistics test	Sample size	Variables
0.000	0.166	200	Bank
0.000	0.090	200	Business ecosystem
0.000	0.130	200	External actors of the ecosystem
0.000	0.311	200	Internal actors of the ecosystem
0.000	0.207	200	Customer satisfaction
0.000	0.198	200	Enhance customer experience

One-sample Kolmogorov-Smirnov test was used to check the data distribution in terms of normality or non-normality of the studied variables. If the significance level is greater than 0.05%, the variable is normal. Otherwise, the data is non-normal. Therefore, according to Table 2, all the variables are abnormal. On the other hand, according to Table 3, the criteria for the structure in question is higher than 0.7, which indicates the appropriate reliability of the model. Considering the higher combined reliability coefficient of the variables in the table below, it shows the appropriateness and acceptable fit of the measurement models. As it is clear from Table 3 taken from the method of Fornell and Locker [9], the root value of the AVE of the variables in the present study, which are located in the main diameter of the matrix, from the correlation value between them, which is in the lower and left houses. The main diameter is arranged more. Therefore, it can be stated that the existing variables in the model interact more with their indicators than with other constructs and the model's divergent validity is at a reasonable level.

Table 3: Fornell and Locker method

4	3	2	1	Variables
			0.578	Bank
		0.576	0.575	Business ecosystem
	0.570	0.560	0.573	Customer satisfaction
0.562	0.549	0.551	0.561	Enhance customer experience

In Table 4, the values of the factor loadings along with the t-statistics for the questionnaire are presented. According to the table below, which shows the results of the factor analysis of the questionnaire items, since the factor loading of all the items is more than 0.4, also the value of t statistic is more than 1.96, so the questionnaire has good validity.

Table 4: Values of factor loadings along with t-statistics for the questionnaire

t statistic	The standard deviation	operational burden	objects	Components	t statistic	The standard deviation	operational burden	objects	Components
5.172	.05617	0.886	51Q	Insurer organization	10.702	.05618	0.793	1Q	Bank
8.797	.05907	0.663	52Q		10.237	.05972	0.895	2Q	
4.214	.06815	0.798	53Q		10.228	.06086	0.876	3Q	
11.556	.06596	0.731	54Q	Company Hi Dependent Presentation	11.762	.06040	0.894	4Q	
16.932	.05517	0.798	55Q		11.012	.06086	0.908	5Q	
19.320	.06578	0.794	56Q		9.251	.07162	0.756	6Q	
11.708	.06261	0.930	57Q	agency Hi Promotional	7.235	.05835	0.585	7Q	
10.886	.06889	0.836	58Q		17.919	.05973	0.801	8Q	
10.615	.06694	0.864	59Q	start up I see And Finn single I see	9.053	.05560	0.741	9Q	
10.857	.06954	0.832	60Q		11.599	.06025	0.875	10Q	
12.171	.06710	0.715	61Q		9.397	.06802	0.754	11Q	
16.753	.05564	0.756	62Q		8.439	.06705	0.705	12Q	
18.729	.06838	0.867	63Q	Institutions Financial	8.066	.07045	0.755	13Q	
16.805	.06900	0.814	64Q		10.291	.06925	0.792	14Q	
12.885	.05790	0.907	65Q		9.241	.05690	0.726	15Q	
18.233	.05895	0.932	66Q		10.894	.06127	0.869	16Q	
12.899	.06558	0.861	67Q		12.657	.06706	0.706	17Q	
12.534	.06296	0.753	68Q	Market Digital	9.565	.05679	0.552	18Q	
14.730	.06984	0.748	69Q		12.208	.06887	0.682	19Q	
19.542	.06704	0.850	70Q		10.963	.05965	0.834	20Q	
15.061	.05741	0.746	71Q		10.389	.06168	0.840	21Q	
16.729	.06056	0.775	72Q		9.183	.05567	0.781	22Q	
10.126	.05465	0.881	73Q		8.933	.05667	0.612	23Q	
16.852	.06702	0.982	74Q	Presentation givers Infrastructure	9.328	.07015	0.771	24Q	Customers
19.393	.06797	0.985	75Q		10.063	.06278	0.813	25Q	
13.327	.06676	0.966	76Q	Development givers Technology	6.460	.06170	0.552	26Q	
16.263	.06751	0.972	77Q	Newfound Digital	7.852	.06434	0.640	27Q	
10.720	.06913	0.908	78Q	centers and institutes	17.750	.05771	0.759	28Q	
4.865	.06154	0.644	79Q	research and educational	12.569	.06345	0.654	29Q	
10.187	.06170	0.906	80Q		8.320	.05845	0.624	30Q	
16.759	.06818	0.723	81Q	Shareholders	3.605	.06485	0.463	31Q	
7.677	.06268	0.687	82Q		3.120	.05447	0.450	32Q	
6.230	.06182	0.632	83Q		9.355	.06984	0.961	33Q	
6.461	.07595	0.592	84Q		16.472	.06289	0.966	34Q	
14.263	.06884	0.695	85Q		11.259	.05445	0.919	35Q	
10.155	.06278	0.721	86Q	institution Governmental politics transition	13.904	.06943	0.943	36Q	
10.774	.05668	0.777	87Q		6.341	.06005	0.466	37Q	
9.196	.05615	0.707	88Q		13.705	.06449	0.917	38Q	
15.279	.06343	0.787	89Q		4.735	.06690	0.682	39Q	Customer support centers
4.492	.06731	0.464	90Q		8.036	.06289	0.697	40Q	
8.769	.06423	0.659	91Q		4.968	.06828	0.702	41Q	
10.001	.06249	0.805	92Q	Fund The founders	4.693	.06766	0.648	42Q	
12.373	.06407	0.696	93Q		7.230	.06591	0.635	43Q	
10.882	.06710	0.829	94Q		7.731	.06435	0.675	44Q	
11.922	.06261	0.674	95Q		9.889	.06320	0.768	45Q	Alternative channel providers
17.292	.06352	0.950	96Q	Competitors	9.766	.06858	0.743	46Q	
10.149	.06284	0.855	97Q		8.087	.06596	0.604	47Q	
16.456	.06565	0.867	98Q		11.405	.05660	0.715	48Q	Business Partners
17.224	.06316	0.961	99Q		7.039	.06227	0.643	49Q	
13.247	.06542	0.919	100Q		10.216	.05936	0.876	50Q	

Coefficient of determining R^2 (R Squares): The R^2 measure determines the impact of an exogenous variable on an endogenous variable. Three values of 0.19, 0.33 and 0.67 have been considered as criteria for weak, medium and strong values of the fit of the structural part of the model by the R^2 criterion. Also, the criterion of predictive quality (Q^2) determines the predictive power of the model. Three values of 0.02, 0.15 and 0.35 are given to show the weak, medium and strong predictive power of the structure or related exogenous structures. It is important to mention that this value is calculated only for the endogenous structures of the model whose indices are reflective. General model fit (GOF): three values of 0.01, 0.25 and 0.36 have been introduced as weak, medium and strong values for this criterion.

$$GOFModel = \sqrt{\overline{Communality} \times \overline{R^2}} = \sqrt{0.533 \times 0.881} = 0.68$$

4.2 Qualitative findings

In this section, in addition to the theoretical foundations and research backgrounds, an interview with 15 experts and experts for the digital transformation of banking services has been presented through the study and review of the

Table 5: Determination coefficient and prediction quality

Q^2	R^2	**The dependent variable**
0.529	0.845	Satisfaction Customer
0.537	0.918	Promotion Experience Customer
0.533	0.881	Average

business ecosystem. The analysis of the interview texts has been done through open, axial coding steps. Table No. 6 shows the codes extracted from the interview, the interviewees who mentioned the questions in their answers.

Table 6: Identified components and indicators for designing the digital transformation model of banking services, improving customer experience and satisfaction through business ecosystems (case study: Bank Mellat) as a result of coding the themes of semi-structured interviews

Code of interviewees	**Indicators**	**Components**
M.2, M.5, M.7, M.10, M.11, M.14, M.15	Digital management and leadership (1), digital business processes (2), digital transformation technology capabilities (3), digital customer experience (4), personalization of digital services (5), digital platform design capabilities (6), management Digital service risk (7), collaboration with ecosystem actors (8), digital networking capability (9), digital knowledge management (10), digital innovation management (11), ability to continuously monitor competitors' digital services (12), digital experience employees (13), organizational digital maturity level (14), improving internal communication of research and development units and service design and marketing (15), providing the possibility of outsourcing alternative services (16), agility and flexibility of the organization (17), attracting Expert manpower (18), cyber security and digital automation (19), focus on open and innovative banking (20), protection of intellectual property and digital rules and standards (21), marketing methods and sales of digital services (22), Culture And Skill Digital Organizational (23)	Bank
M.1, M.3, M.8, M.9, M.12, M.13	Security and traceability (24), customers' digital skills (25), privacy protection (26), ease of use (27), perceived risk (28), customers' income level (29), multiple usability (30), cost Using services (31), customer loyalty to the organization (32), achieving goals (33), access to information and documentation (34), digital service innovation (35), customer support (36), functional quality (37), Speed Services (38)	Customers/Users
M.5, M.3, M.7, M.13, M.6, M.14	Employment channel Hi novel communication (39), Presentation Services 24*7 support (40), speed responsiveness (41), transparent making Gap Hi Services Digital (42), Management connections effective With Customers Network Digital (43), commitment And Responsibility adaptability the force Human (44)	Customer support centers
Grade 14, Grade 10, Grade 4, Grade 6, Grade 2, Grade 11, Grade 8	Support System Central the unit Hi queue (resources and Expenses branches Agent) (45), promotion Ability Hi device ATMs and pos and vpos Store (46), presentation Services Bank at bed Hi Along Bank and Internet bank (47)	Alternative channel providers
M.12, M.7, M.8, M.1, M.13	Price put competitive Share products (48), Partners commercial at Market Goal (49), access to the Web service Hi Informational digital (50)	Business Partners
M.1, M.3, M.12, M.8, M.2, M.6	Delete Supervision Tariff E (51), evaluation and Management Risk Digital (52), ability compensation Damage Insurance the candidates Network Services digital (53)	Insurance organizations
M.4, M.5, M.7, M.8, M.11, M.15	Protection Managers senior From Evolution Digital (54), ability Hi technologically Evolution Digital (55), management Environment competitive Services digital (56)	Affiliated companies of data providers
M.10, M.11, M.13, M.15, M.6	Strategies promotional digital (57), digital management marketing (58)	Advertising agencies
M.3, M.7, M.13, M.10, M.1, M.8, M.12, M.5	Rate Fund put Digital (59), ability analysis needs and Market Hi Digital (60), ability Cooperation effective With other Actors Ecosystem (61), management creation Value At Network Digital (62)	Startups and fintechs
M.4, M.6, M.2, M.14, M.15	Development finding Rules related To policies money laundering And a fight With Terrorism (63), development finding Rules related To policies Financial And money (64), development finding Rules And regulation supervisory On Number And Volume transactions Ecosystem (65), development finding Rules related To Control rate Interest Services Digital (66), development finding Rules related To Record electronic and get documents Contracts Facilities Banking (67)	Financial institutions
M.1, M.2, M.11, M.5, M.10	Volume Trades Digital (68), quality and Variety Platform Hi Digital (69), scale the reception Technology Digital (70) Activity Hi Media Oh you and Network Social (71), transaction security channel Hi Digital (72), cost Hi Employment channel Hi transactional Digital(73)	Digital market
M.7, M.3, M.5, M.9, M.10	Development width Bond to exchange Information between Actors Ecosystem (74), development Under Constructions Technology Hi Evolution Digital (75)	Infrastructure providers
M.5, M.8, M.7, M.12, M.15, M.14	cycle life Technology Hi Digital (76), native making platform Hi digital (77)	Developers of emerging digital technology

M.1, M.10, M.9, M.7, M.12	the future writing and Assessment Technology Hi Digital (78), ability Creation Relationship effective with Development givers Technology Digital (79), ability Presentation solutions native making Technology Hi Digital (80)	Research and educational centers and institutions
M.3, M7, M13, M.10, M.6	References technologically evolution digital organization (81), share services digital organization at market target(82), size organization (83), power conformity adaptability organization with changes digital (84), management and strategy Hi digital organization (85)	Shareholders
M.8, M.7, M.12, M.15, M.1	Development finding rules related to solve and castle differences (86), development finding rules related to rights ownership Maani (87), development finding politics Hi supportive from research and development and fund put domestic (88), development finding rules related with politics Hi supportive acquisition And works of Digital(89), Move to side government digital(90), development the web service Hi informational digital (91)	Policy-making government body
M.13, M.12, M.15, M2, M4,	Volume fund put at development technology hI digital (92), rate coming back capital (93), changes conditions economic and political (94), analysis markets digital (95)	Investors
M.7, M.12, M.15, M.14, M.1	The ability to design and supply digital services (96), marketing and sales methods of digital services (97), the share of competing organizations in the digital services market (98), managing the experience of digital network customers (99), skilled human resources (100)	Competitors

After extracting the themes of the theoretical saturation table for the components and indicators of the model for designing the digital transformation model of banking services and improving the customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat) it is as follows: Then after the interview Open, central and selective codes have been extracted with these people. It should be mentioned that theoretical saturation was achieved after the interview. In this way, new extracted codes were not added to the total of codes in the 15th interview and the extracted codes were repeated. The theoretical saturation table for the dimensions, components and indicators of the model is given below:

Table 7: Theoretical saturation table for model dimensions for designing the digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat)

Code System	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	SUM
Bank	111	87	3	45	48	8	40	18	16	17	21	9	62	20	14	519
Customer satisfaction	27	5	60	41	26	16			18	8	3	7		7		218
Improving customer experience)	15	20	12	4	15	3		4	22		24				8	127
Business ecosystems	22	17	23	19	13	5	39	34	19	28	28	14	16	30	33	340
SUM	175	129	98	109	102	32	79	56	75	53	76	30	78	57	55	1204

After reaching theoretical saturation of the interviews, qualitative data analysis was finished. Qualitative data analysis and processes were performed in MAXQDA 2018 qualitative data analysis software. The final output of the extracted components and indicators of the design of the digital transformation model of banking services and the improvement of customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat) is as follows.

5 Discussion and conclusion

According to the study conducted in this research, the design components of the digital transformation model of banking services and the improvement of customer experience and satisfaction through the development of business ecosystems in Bank Mellat, centered on the bank, including 8 internal actors of the ecosystem (customers, support centers, providing alternative channel providers, business partners, insurance organizations, data providers, advertising agencies, startups and fintechs) and 9 external ecosystem actors (financial and government institutions, digital market, infrastructure providers, technology developers emerging digital, research and educational centers and institutions, competitors, shareholders, investors) and includes a total of 100 influential indicators, which are divided by ecosystem players as follows:

- 23 influential bank components including: digital management and leadership (1), digital business processes (2), digital transformation technology capabilities (3), digital customer experience (4), personalization of digital

Table 8: The theoretical saturation table of the components for designing the digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat)

Code System	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	SUM
Cyber security and digital automation.	1	3	3	4	4								1	1		17
1 3 Improving internal communication of research and development and service design units				4	5		3						2			18
The digital experience of employees.	3	6		1	3				7		2		1			23
Digital customer experience.	4	1		1		8				7		8				29
Collaborating with ecosystem actors.	4	4		1	1								2	2		14
Focus on open and innovative banking.	3	1		2	2		9			2		1	2	1	2	25
Recruiting specialized human resources.	3	5			3		2						7			20
Agility and flexibility of the organization.	2	6		1	6								4			19
Marketing methods and sales of digital services.	3	3		1			7		3	1			2	2	6	28
Organizational digital maturity level.	12	6		3	1		3						3	2		30
Personalization of digital services.	4	6		3									1	1		15
Providing the possibility of outsourcing alternative services.	14	4		4	1								11	2		36
Digital business processes.	6	1		4			3						3			17
Organizational digital culture and skills.	4	1		2	3								4	2		16
The ability to continuously monitor competitors' digital services.	3			2	1		2						2			10
Digital networking capability.	14	4			2				4		4		1			29
Ability to design digital platforms.	2	6		1	2		2			7			1	2		23
Capabilities of digital transformation technology.		3		1	4			9			11		1			29
Intellectual property protection and digital laws and standards	3	7		1	4		6						7			28
Digital knowledge management.	5	5						9							6	25
Risk management of digital services.	9	5		3					2		4					23
Management of digital innovations.	5	6		3	2		1						2	3		22
Digital management and leadership.	4	3		3	4		2						5	2		23
Security and traceability.	5	1	11	5	3				2					1		28
Customers' digital awareness and skills.	2		3	5	2				1					2		15
Privacy in digital networks.	2		5	2	6	7			2	2		1				27
Access and ease of use.	1		12	9	5				2							29
Perceived risk of digital services.	2	1	6	4	2									3		18
The income level of customers.	3		4	1	2	3			1	3		2				19
Multiple usability of digital services	1		6	10	3	2			6	3		4		1		36
The costs of using digital services.	4		13	5	3	4										29
Customer loyalty to the organization.	7	3							4		3					17
Achieve goals	5	4	12	4	6	3			3							37
Access to information and documents.		4			2				8		1					15
Service speed.	3	4			3				3		1					14
Digital service innovation.	7	2			4				8		7					28
Customer support.		2						4			7				3	16
Functional quality.		4									8				5	17
Internal actors of the ecosystem.	2	8	8	7	4		19	34	11	8	21	5	2	8	14	151
External actors of the ecosystem.	20	9	15	12	9	5	20		8	20	7	9	14	22	19	189
I am	175	129	98	109	102	32	79	56	75	53	76	30	78	57	55	1204

Table 9: Theoretical saturation table of the following components for designing the digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat)

Code System	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	SUM
Advertising agencies.	1	3	8	7	4			11			4			2		40
Insurance organizations	1	1							4		7					13
Alternative channel providers.		2						13			5				4	24
Customer support centers.		2						10			5					17
Affiliated companies.												4	2	4	3	13
Business Partners .							3		4	4				2	2	15
Startups.							16		3	4		1			5	29
Digital market.												3	13	6	11	33
Research and educational centers and institutions.							13			5		1			4	23
Policy-making government institution.							7			7		2			2	18
Financial institutions.	5	2	1	4	3				2					7		24
—		1	5									2	1	9	2	20
Shareholders .	3					2				8		1				14
Investors .	5		6	5					1							17
Developers of emerging digital technologies.	3		3	3	2	3			1							15
Infrastructure providers.	4	6			4				4		7					25
I am	22	17	23	19	13	5	39	34	19	28	28	14	16	30	33	340

Table 10: The theoretical saturation table of indicators for designing the digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat)

Code System	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	SUM
Digital marketing.	1	3	8	5												17
Digital advertising strategies.				2	4			11			4			2		23
Digital risk assessment and management.	1	1							1							3
The ability to compensate the insureds of the digital service network.											4					4
Removal of tariff control.									3		3					6
Providing banking services on mobile banking platforms and internet banking.		2						3								5
Improving the capabilities of store devices.								7								7
Support the central system of queue units.								3			5				4	12
Providing support services 724		2														2
Using new communication channels.								3								3
Commitment and responsibility of human resources.								4								4
Response speed.											5					5
Clarifying gaps in digital services.								1								1
Effective communication management with digital network customers.								2								2
Support of senior managers for digital transformation.												4				4
Technological capabilities of digital transformation.													1	3		4
Managing the competitive environment of digital services.													1	1	3	5
Access to digital information web services.							3		3							6
The share of business partners in the target market.										1				2	2	5
Competitive pricing of products.									1	3						4
Analysis of needs and digital markets. ability							5									5
Ability to cooperate effectively with other actors of the ecosystem.							6									6
Management of value creation in the digital network.										2		1			5	8
Digital investment rate.							5		3	2						10
Security of transactions of digital channels.												3	2			5
Volume of digital transactions.													8			8
Media and social network activities														2	7	9
Quality and diversity of digital platforms.															4	4
The rate of acceptance of digital technology.													1	4		5
The costs of using digital trading channels.													2			2
Foresight and assessment of digital technologies.							6									6
The ability to provide localization solutions for digital technologies C										4		1			4	9
Ability to establish effective communication with digital technology developers.							7			1						8
Development of digital information web services.							3									3
The development of policies supporting research and development and investment.										2						2
The development of laws related to support policies.												1			2	3
The development of laws related to intellectual property rights.							2			2		1				5
The development of rules related to the settlement of disputes.							2									2
Moving towards digital government.							1			2						3
The development of laws related to electronic registration and obtaining contract documents.	4															4
The development of laws related to money laundering and terrorism policies.		2	1	2												5
The development of laws related to financial and monetary policies.					2				2					3		7
Digital. The The development of laws related to the control of service interest rates.					1									4		5
development of rules and regulations for monitoring the number and volume of transactions.	1			2												3
Ability to design and supply digital services.		1	2													3
Marketing methods and sales of digital services.													1	4		5
The organization's share of the digital services market.			1											1	1	3
Digital network customer experience management.			1											2	1	4
Skilled manpower			1									2		2		5
The size of the organization.	3															3
The share of the organization's digital services in the target market.										2						2
Organization's ability to adapt to digital changes.										2		1				3
Management and digital strategies of the organization.						1				3						4
Technological resources of the organization's digital transformation.										2						2
The amount of investment in the development of digital technologies.	3															3
Analysis of digital markets.			2	3												5
Changes in economic and political conditions.	2		1						1							4
invest return rate .			3	2												5
of digital platforms.	3		3													6
Life cycle of digital technologies.				3	2	3			1							9
Broadband development for information exchange between ecosystem actors.	4	5			4				1							14
Development of infrastructures of digital transformation technologies.		1							3		7					11
I am	22	17	23	19	13	4	40	34	19	28	28	14	16	30	33	340

services (5), the ability to design digital platforms (6), risk management of digital services (7), collaboration with ecosystem actors (8), digital networking ability (9), digital knowledge management (10), digital innovation management (11), monitoring ability The continuous digital services of competitors (12), the digital experience of employees (13), the level of organizational digital maturity (14), improving the internal communication of research and development units and service design and marketing (15), providing the possibility of outsourcing

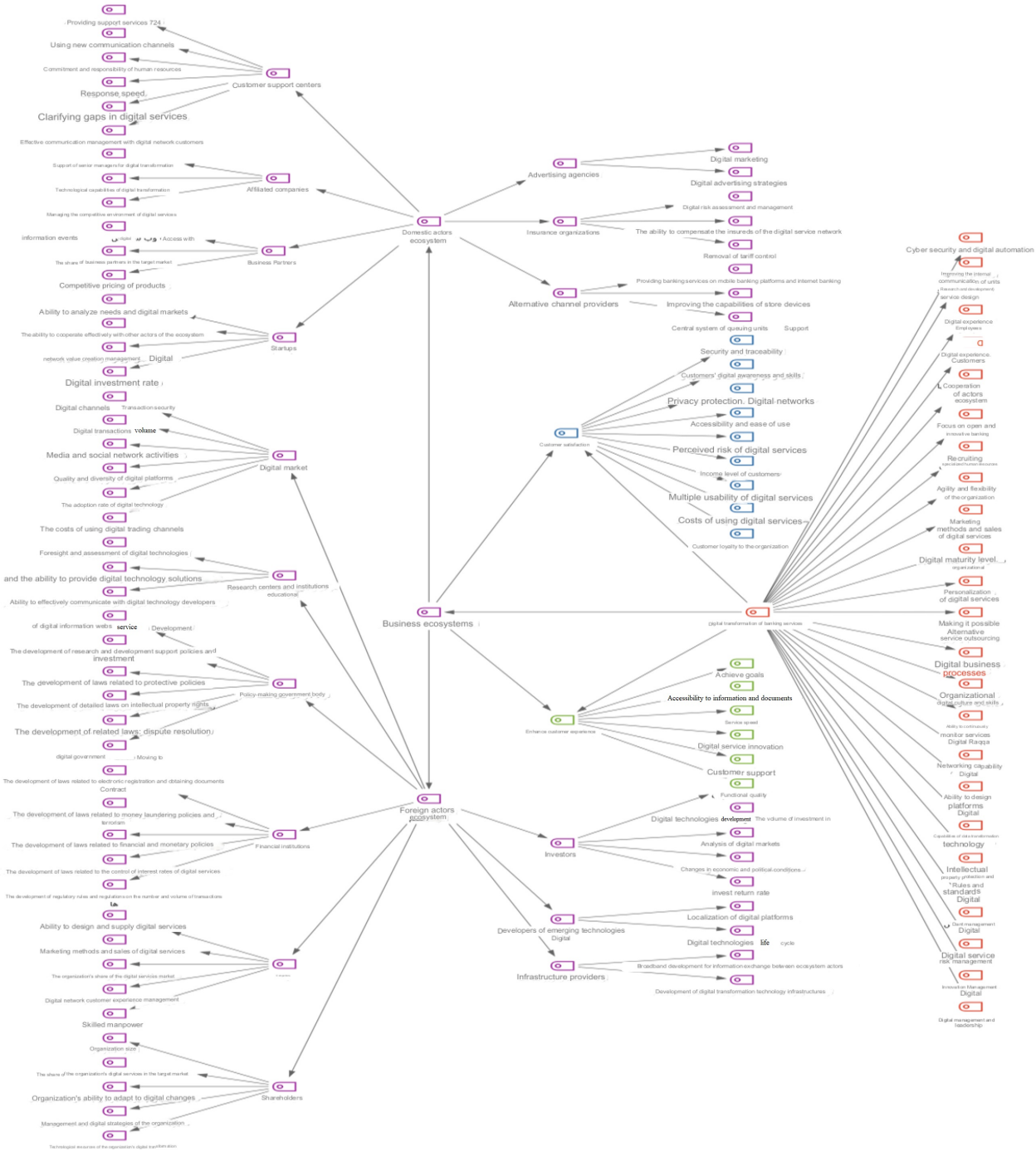

Figure 1: Final output of qualitative data analysis of research components and indicators for designing a digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems (case study: Bank Mellat)

alternative services (16), Agility and flexibility of the organization (17), recruitment of expert human resources (18), cyber security and digital automation (19), focus on open and innovative banking (20), protection of intellectual property and digital rules and standards (21) Marketing methods and sales of digital services (22), organizational digital culture and skills (23)

- The influencing factors of 15 customers/users include: security and traceability (24), digital skills of customers (25), privacy protection (26), ease of use (27), perceived risk (28), income level of customers (29), multiple usability (30), the cost of using services (31), customer loyalty to the organization (32), achieving goals (33),

access to information and documents (34), innovation of digital services (35), support Customers (36), functional quality (37), service speed (38)

- The effective components of customer support centers include: using new communication channels (39), providing 24*7 support services (40), response speed (41), clarifying gaps in digital services (42), effective communication management with Digital network customers (43), commitment and responsibility of human resources (44)
- The effective components of alternative channel providers include 3 items: support for the central system of queuing units (resources and costs of operating branches) (45), upgrading the capabilities of ATM devices and POS and VPOS stores (46), providing banking services on the platform Mobile Bank and Internet Bank (47)
- Influential components of business partners 3 items including: competitive pricing of products (48), share of business partners in the target market (49), access to digital information web services (50)
- Influential components of insurance organizations 3 cases including: elimination of tariff supervision (51), digital risk assessment and management (52), the ability to compensate insureds of the digital service network (53)
- Influential components of affiliated companies of data providers 3 items including: support of senior managers for digital transformation (54), technological capabilities of digital transformation (55), management of competitive environment of digital services (56)
- Influential components of advertising agencies 2 items including: digital advertising strategies (57), digital marketing management (58)
- The influential components of startups and fintechs, 4 items including: digital investment rate (59), ability to analyze needs and digital markets (60), ability to cooperate effectively with other ecosystem players (61), value creation management in the network Digital (62)
- The influential components of financial institutions including 5 items: the development of laws related to money laundering and anti-terrorism policies (63), the development of laws related to financial and monetary policies (64), the development of regulatory laws and regulations on the number and volume of ecosystem transactions. (65), the development of laws related to the control of interest rates for digital services (66), the development of laws related to electronic registration and the obtaining of collateral for bank facility contracts (67)
- The influential components of the digital market include: the volume of digital transactions (68), the quality and variety of digital platforms (69), the level of adoption of digital technology (70), media and social network activities (71), the security of channel transactions. Digital (72), costs of using digital trading channels (73)
- Influential components of infrastructure providers in 2 cases including: development of bandwidth for information exchange between ecosystem actors (74), development of digital transformation technology infrastructures (75)
- Influential components of emerging digital technology developers, 2 items including: the life cycle of digital technologies (76), localization of digital platforms (77)
- Influential components of research and educational centers and institutions 3 cases including: foresight and evaluation of digital technologies (78), the ability to establish effective communication with digital technology developers (79), the ability to provide solutions for the localization of digital technologies (80)
- The influential components of the 5 stakeholders include: technological resources of the organization's digital transformation (81), the share of the organization's digital services in the target market (82), the size of the organization (83), the ability of the organization to adapt to digital transformations (84), management and strategies digital organization (85)
- The influential components of the policy-making governmental institution include: the development of laws related to dispute resolution (86), the development of laws related to intellectual property rights (87), the development of policies supporting research and development and domestic investment. (88), the development of laws related to the support policies of digital businesses (89), moving towards a digital government (90), the development of digital information web services (91)
- Influential factors of investors, 3 items including: the volume of investment in the development of digital technologies (92), the rate of return on investment (93), changes in economic and political conditions (94), analysis of digital markets (95)

- The influential components of 5 competitors include: the ability to design and supply digital services (96), the methods of marketing and selling digital services (97), the share of competing organizations in the digital services market (98), managing the experience of digital network customers (99), Skilled human resources (100)

The results of this research are consistent with the studies of Aqiqi et al. [3] and Abubakre et al. [1]. One of the limitations of this research is the cross-sectional nature of the research, which limits the generalizability of the results. The use of cross-sectional data does not help us in interpreting the design of the digital transformation model of banking services and improving customer experience and satisfaction through the development of business ecosystems in Bank Mellat. Therefore, it is suggested to conduct longitudinal studies in order to increase our knowledge regarding the possible relationship between causes and effects. The statistical population is only related to 15 experts, so the research results cannot be generalized to all branches, specialties and other scientific trends. Due to the limited statistical population, the research cannot be generalized to the whole country. The research is conducted cross-sectionally, so it makes it difficult to draw conclusions about causality and analyze all influential factors.

Suggestions based on research results include: increasing cyber security and digital automation, improving internal communication of research and development units and designing services and marketing, helping to increase the digital experience of employees, helping to increase the digital experience of customers, helping to increase cooperation with Ecosystem players, focusing on open and innovative banking, attracting specialized human resources, agility and flexibility of the organization, creating marketing and selling methods of digital services, helping to increase the level of organizational digital maturity, personalizing digital services, providing the possibility of outsourcing alternative services. Helping to increase digital business processes is helping to increase organizational digital culture and skills.

It is suggested to conduct further research based on larger samples and in other similar organizations in other countries. It is suggested to use experimental and semi-experimental research to investigate this issue.

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Women and Employment

VĚRA KUCHAŘOVÁ*

Research Institute of Labour and Social Affairs, Prague

Acknowledgement

This paper is based on the results of the research project “The Status of Women and Men in the Czech Republic” from 1998. It was inspired by the need to obtain information on the circumstances of enforcement of EU legislation on equal opportunities in the Czech Republic in connection with the Czech Republic’s application for EU membership. The project aimed to investigate the public perception and consciousness of equal opportunities. Therefore, it deals with the main issues of the EU directives and recommendations: equal pay, equal treatment as regards access to employment, promotion and vocational training, legal knowledge concerning employment and so on. Reconciling family and working life is a crucial problem in the Czech Republic, as in other countries. It can be understood as a result of both modernisation and the special national situation that has resulted from the social and economic transition. The paper compares the conditions of women’s employment with their professional expectations and satisfaction. It shows the social determination of these and some stereotypes in understanding men’s and women’s roles. These facts influence women’s position in the labour market in various aspects [13]. Employment is not merely a source of income and personal satisfaction, but also an important field for the formation of social relations between individuals and one of the factors that determine social status. Work has a somewhat different role in the life of women than of men, even if the basic self-realisation (to use one’s abilities, to be independent, to share in a joint project, to do something useful) and instrumental (to earn a living or to be financially independent) needs are more or less common to both genders. The basic difference lies in the place that a person’s profession and work hold both in determining the social status of women in comparison with men and confrontation with women’s other roles and aspirations, primarily in the family.

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