

Research Article

# The Role of Digital Transformation in Promoting Digital Entrepreneurship : An Analytical Study of the Opinions of a Sample of Employees in Private Banks in the Middle Euphrates Region

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**Abstract:** The current research aims to identify the role of digital transformation across its dimensions (technology, digitization of operations, databases, human resources) in promoting digital entrepreneurship in its dimensions (digital information base, digital business environment, digital skills and e-leadership, financing) among a sample of employees in private banks in the Middle Euphrates region. The research problem emerged regarding the ability of the private banks under study to use digital transformation and digital entrepreneurship. This problem lies in the lack of environmental stability, limited financial infrastructure, and weak human expertise. Therefore, the research problem was formulated in an important question: What is the impact of digital transformation on promoting digital entrepreneurship in Iraqi private banks? In order to determine the level of research variables, a questionnaire was adopted by distributing (136) questionnaires to employees in private banks in the Middle Euphrates region to measure the nature of the level of the research variables. To analyze the results, the statistical packages (SPSS & AMOS.V.29) were used. As a result, the research produced various results, most notably the existence of a significant correlation between digital transformation and entrepreneurship. Digital businesses contribute to encouraging innovation in developing new financial products and services that meet changing market needs. The results also showed that digital transformation helps private banks improve the efficiency of internal operations, leading to a reduction in transaction time. Furthermore, digital transformation processes can provide smoother and faster financial services, which supports customer satisfaction and loyalty.

**Keywords:** Digital Entrepreneurship, Digital Transformation, Private Banks.

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## 1. Introduction

The business environment and competitive landscape of local, international, and global organizations have been significantly impacted by globalization, privatization, and technological advancements, which have raised interest in organizational entrepreneurship in recent years. Its importance in the general development of a nation's economy, the growth and extension of organizations, and their access to material and financial resources have all contributed to the increase in interest in this topic. The topic of entrepreneurship is significant, and as the business environment is changing at an accelerated rate, its significance as a means for firms to adapt to the demands of change and competition has grown.

The process of starting and running a new business in order to take advantage of a novel and exceptional opportunity is known as entrepreneurship. We call this "external entrepreneurship." By starting new companies or strategically reviving existing ones, entrepreneurship can also take place inside an already-existing organization. This is referred to as corporate or internal entrepreneurship. As the need for organizations to be more innovative has grown in order to survive and accelerate growth in a highly competitive global environment, dynamic change, and increasing levels of uncertainty, corporate leadership has

become a crucial tool for existing organizations to continue finding and seizing opportunities to move organizations and individuals into a new state of existence.

## 2. Scientific Methodology

### First: Research Problem

In light of the increasing trend toward market globalization and free trade, companies find themselves required to innovate continuously in order to improve and develop their flexibility, competitiveness, and ability to react and respond to developments in their markets and external environments. Therefore, many authors have highlighted the importance of organizational work as a catalyst and driver of innovation in organizations, to the point that some authors have discussed the need for a school of organizational entrepreneurship within the field of entrepreneurship. Other authors have linked organizational entrepreneurship to the organizational learning process, while others have highlighted the role of organizational entrepreneurship in both small enterprises and family businesses. Some authors have discussed the role of organizational entrepreneurship in emerging and transitional economies. Hence, a significant problem arises regarding the use of digital transformation and digital entrepreneurship by the private banks under study. This problem lies in the lack of environmental stability, limited financial infrastructure, and weak human expertise. Accordingly, the research problem can be formulated into an important question: "What is the impact of digital transformation on enhancing digital entrepreneurship among Iraqi private banks?" From this question, the following questions can be formulated:

- 1- What are the mechanisms through which digital transformation and digital entrepreneurship can enhance the potential of emerging markets?
- 2- What is the nature and type of relationship between digital transformation and digital entrepreneurship?

### Second: Research Objectives

The primary objective of the research is to study the role of digital transformation in supporting digital entrepreneurship, with the aim of achieving the following sub-objectives:

1. Determine the nature and importance of digital transformation.
2. Determine the nature and importance of digital entrepreneurship.
3. Determine how digital transformation contributes to supporting digital entrepreneurship.

### Third: The Importance of the Research

The importance of the research stems from several aspects, the most important of which are the following:

- 1) The scarcity of academic studies (to the researcher's knowledge) that address the study of digital transformation and digital entrepreneurship in the Iraqi environment in general, and in Iraqi government institutions in particular.
- 2) The role digital entrepreneurship plays in developing organizations by innovating effective business processes or enhancing their production by introducing new technologies that advance them to the ranks of global competitiveness.
- 3) The significant focus of researchers on studying such issues related to business management and entrepreneurship will bring concepts closer in the field of entrepreneurship.
- 4) Clarifying the scientific and practical steps that must be followed in digital entrepreneurship for organizations due to the multiplicity of approaches and trends, upon which the competitiveness of organizations is enhanced.
- 5) Providing a new perspective on competitive variables at the theoretical and organizational levels.
- 6) Developing a vision for managers working in organizations regarding the dimensions of the entrepreneurial organization as a modern concept.

#### Fourth: Research Methodology

In light of the research problem and in pursuit of its objectives, the researcher relied on the inductive approach. In accordance with this approach, the researcher collected, reviewed, and analyzed secondary data sources, including relevant Arabic and foreign references, periodicals, articles, reports, and research and studies that addressed the research variables. This was done to establish a theoretical background for the research variables.

#### Fifth: Research Hypotheses

First Main Hypothesis: There is a significant correlation between digital transformation and digital entrepreneurship, and the following hypotheses branch out from it:

- a) There is a significant correlation between the technology dimension and digital entrepreneurship in all its dimensions.
- b) There is a significant correlation between the process digitization dimension and digital entrepreneurship in all its dimensions.
- c) There is a significant correlation between the database dimension and digital entrepreneurship in all its dimensions.
- d) There is a significant correlation between the human resources dimension and digital entrepreneurship in all its dimensions.

**First Main Hypothesis:** There is a significant effect of digital transformation on digital entrepreneurship, and the following hypotheses branch out from it:

- a. There is a significant effect of the technology dimension on digital entrepreneurship in all its dimensions.
- b. There is a significant effect of the process digitization dimension on digital entrepreneurship in all its dimensions.
- c. There is a significant impact of the database dimension on digital entrepreneurship in all its dimensions.
- d. There is a significant impact of the human resources dimension on digital entrepreneurship in all its dimensions.

#### Sixth: Hypothetical plan

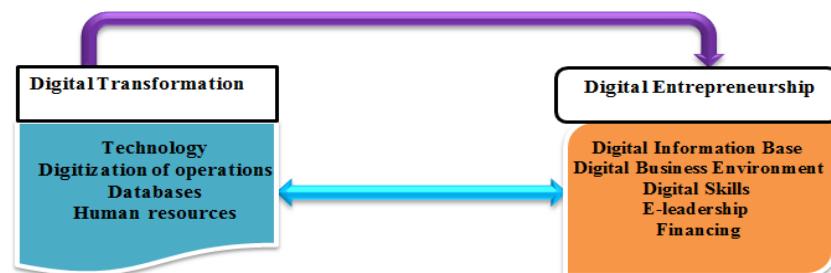


Figure 1. Hypothetical diagram

#### Seventh: The Research Sample

The research community represents Iraqi private banks, while the research sample included employees in Iraqi private banks, consisting of five banks (the National Bank of Iraq, the Iraqi Credit Bank, the Gulf Bank, the Arab Mashreq Bank, and Al-Mansour Investment). Accordingly, (136) questionnaires were distributed to employees in Iraqi private banks.

### **First: The Concept of Digital Transformation**

Digitization refers to "the process of converting data into digital form using computers" (Yassin, 2024: 56). In information systems, digitization usually refers to the process of converting text or printed images, whether photographs, illustrations, maps, or others, into binary signals using a scanner, so that the results are displayed on a computer screen (Fathia, 2024: 32). Meanwhile, digital transformation is defined as bringing about changes in how individuals perceive, think, and behave at work, and striving to improve the work environment by focusing on the use of information and communications technology (ICT) (Lozić & FotovaČiković, 2024: 327).

Wan et al. (2023: 316) indicated that digital transformation relies on a set of modifications that must occur within an organization or entity wishing to transform its work mechanism from a traditional form to an advanced form based on the use of ICT and computers in dealing with the organization, whether by employees or internal auditors. Beneficiaries (Ali, 2023: 342).

Shaimaa (2024: 37) indicated that digital transformation is the process of transforming the business model of government institutions or private sector companies to one that relies on digital technologies for service delivery, product manufacturing, and human resource management (Yang et al., 2024: 8). It is a shift in the way companies operate, reducing repetitive work and increasing the time spent thinking about development (Sahi & Qanbar, 2024: 595). He stated that digital transformation is accelerating the daily workflow, leveraging the significant technological advancements to serve the company's customers faster and better (Marion & Fixson, 2021: 193).

The process of altering an organization's or business's infrastructure is known as "digital transformation," and it has to do with using technology and digital environment resources to change internal and external procedures and enhance the customer experience (Addas, 2024: 8). This shift impacts all areas, departments, and corporate services, not just those that offer digital goods or concentrate on technology and the internet (Kraus et al., 2021:3).

From the above, we can conclude that digital transformation is increasing the efficiency of the workflow, reducing errors and increasing productivity. Digital transformation is increasing the number of members on your team without the need to hire new staff.

### **Second: The Importance of Digital Transformation**

Consumers are demanding this of all the brands they interact with and buy from as they have realized the advantages of businesses who adopt and incorporate digital development into their operations (Plekhanov et al., 2023: 823). A study by Zhang & Chen (2024: 1483) indicated that the importance of digital transformation lies in the following:

- a. Reducing and saving effort, energy, and costs.
- b. Regulating and improving operational efficiencies.
- c. The speed of digital procedures exceeds that of traditional methods, making these procedures easier and faster for beneficiaries.
- d. Opening the door to creativity in how services are provided to customers.

e. Facilitating how officials monitor workflow.

Teng et al. (2022: 3) stated that digital transformation contributes to increasing the speed of diffusion and expansion of companies and institutions and their reach to large audiences. It also allows potential customers to learn about your business and conduct sales and purchases anytime, anywhere (Fernandez-Vidal et al., 2023:31). Its importance lies in the ability to track, monitor, and analyze the metrics and data you will obtain through digital marketing for your business. This data will enable you to use it to improve and develop the quality of your work to achieve better results (Peng & Tao, 2022:2). When you fully digitally transform your business and work to transform it skillfully and effectively, this will contribute to improving and raising the overall profits of your business (Li et al., 2023:11).

### **Third: Dimensions of Digital Transformation**

Digital transformation can be measured through four important dimensions (Abeer & Shaima, 2024):

A. Technology: Technology is used to address an organization's attitudes toward new technology, as well as its ability to exploit it. This includes the strategic role of information and communications technology within the organization and its future technological ambitions. Accordingly, the organization must decide whether it wants to be a leader in the use of technology, with the ability to set its own technological standards, or whether it will rely on existing standards and view technology as a means of implementing business processes (Matt et al., 2015: 341).

B. Digitization of processes: This refers to the use of technology to improve and simplify business or administrative processes. Through digitizing processes, efficiency can be improved, costs reduced, and the speed of task execution increased (Butt, 2024: 17).

C. Databases: These are organized collections of data that are stored and managed in a way that allows for easy access and retrieval (Sawadogo & Darmont, 2021: 98).

D. Human Resources: Human resources in the public sector refer to employees working in government agencies or public organizations who are responsible for providing services to citizens. The role of human resources is to manage and develop employees to maximize organizational effectiveness and improve the quality of public services provided (Jamal, 2024:12).

### **Fourth: The Concept of Digital Entrepreneurship**

Digital entrepreneurship is defined as the process and procedures in which something new of value is created, requiring the risk of undertaking it, and the necessary time, effort, and money to implement it, resulting in the receipt of the accompanying material and moral returns (Kraus et al., 2021: 13). It is broadly defined as the creation of new projects and the transformation of existing projects and companies through the development of new digital technologies or the new use of these technologies (Zaoui & Souissi, 2020: 623). Another definition of digital entrepreneurship is the process of managing and conducting business operations involving goods and services by sending data via the Internet or other global information networks (Tabrizi et al., 2019: 2). The concept of digital entrepreneurship is associated with three types of activities. The first is internet connectivity or access services, including services with technical content, such as the services provided. The second is the delivery or provision of services by internet service providers. The third is the use of the internet as a means of distributing services, goods, and services delivered in a non-technical manner (Verhoef et al., 2021: 889).

Plekhanov et al., 2023: 823, indicated that it is the phenomenon associated with digital entrepreneurship. Digital entrepreneurship is defined as adventurous human activity that seeks to generate value by creating or expanding economic activity by exploiting new products, processes, and markets based on information and communications technology. A digital entrepreneur is viewed as someone who seeks to generate value by creating or expanding existing economic activity by exploiting new products, processes, and markets based on information and communications technology (ICT). Therefore, it can be said that digital entrepreneurship is about identifying ideas and opportunities, leveraging them, and transforming them into useful goods and services, adding long-term value through innovation and reliance on communications and information technology, which help generate financial profit, while taking into account the presence of risk.

**Fifth:** The Importance of Digital Entrepreneurship

Due to its inventive nature, entrepreneurship in general has the potential to significantly impact structural change in a number of ways. First, whether in trade, industry, or agriculture, it is a crucial mechanism for shifting production resources from low-value and low-productivity economic activities to high-value and high-productivity ones. Second, it encourages investment and helps create a knowledge-based economy, which is essential for economic expansion since it promotes the creation of jobs, skill development, technological innovation, and competition, all of which raise productivity (Nadkarni & Prügl, 2021: 23). Entrepreneurship also plays an important role in supporting societal development (Reis et al., 2017: 412). This role includes creating new markets, discovering new sources of resources, mobilizing capital resources, introducing new technology, and creating new job opportunities (Fernandez-Vidal et al., 2022: 32). Digital entrepreneurship plays an important role in economic growth and raising the standard of living of the local community, by making great efforts to run their businesses, benefit from their local resources, and provide job opportunities for themselves and the local population. Increasing their commercial activity and investments in less economically developed areas leads to an improvement in the infrastructure of their local community (Butt et al., 2024:3).

**Sixth:** Dimensions of Digital Entrepreneurship

Digital entrepreneurship can be measured through four important dimensions (Nadkarni & Prügl, 2021):

## 1. A digital database

Complex data or information used by computer systems is stored in this database. One of the most crucial technologies for planning digital projects and businesses is information and communications technology (ICT), which also facilitates the electronic movement of data about organizations and industries (Berger, 2015: 3). Electronic innovations, as well as e-commerce, and the establishment of new businesses or the strengthening and development of existing ones that adopt the digital aspect can be supported by the public and private sectors. In this area, the ICT sector acts as a driver for the dissemination and marketing of innovative products and ideas (Tomičić et al., 2020: 127).

## 2. The Digital Business Environment

A virtual space where one or more computer systems are used to monitor and store business information and all details about individual interactions. This can be done through social networks consisting of a single central server to share information and data for each customer (Mergel et al., 2019:5). The digital business environment can be enhanced and ease of doing business can be improved by providing a supportive regulatory environment that facilitates entry into the world of marketing, from supply and demand for products, based on digital technology and the development of information and communications technology (Loonam et al., 2018:103).

## 3. Digital Skills and E-Leadership

There are many skills that anyone must possess to become an entrepreneur, including digital skills, which refer to the individual's skills related to the use of digital technologies. E-Leadership refers to the process through which individuals are influenced to change their attitudes, behavior, and performance in order to effectively achieve their goals (Nadkarni & Prügl, 2021:24).

## 4. Financing

Access to financing is a fundamental component of any business project to effectively conduct its activities and operations. It is defined as the ability of an individual or institution to obtain financial services, including credit, deposits, payments, insurance, and others (Berger, 2015:3). The type of financing depends on the type of business and its products and services. Therefore, managing financing is extremely important for every business owner to reduce financial risks, given the availability of numerous formal and informal financing sources. It is also important to explore innovative ways to increase digital investments (Loonam et al., 2018:103).

#### 4. Part Three: The Practical Side

##### First: Coding and Characterizing Research Variables

In order to efficiently organize information and analyze data, coding and describing research variables are crucial processes in the design of research projects. The research's method for coding and characterizing the variables is shown in table (1).

**Table 1.** Variable coding

Variables	Dimensions	vertebrae	Code	Source	
Digital Transformation	Technology	4	DTR	DTE	Abeer& Shaima, 2024
	Digitalization of Operations	5		DDP	
	Databases	4		DDA	
	Human Resources	3		DHR	
Digital Entrepreneurship	Digital Information Base	5	DIEN	DID	Nadkarni & Prügl, 2021
	Digital Business Environment	3		DIBE	
	Digital Skills and E-Leadership	4		DIEL	
	Finance	4		FIE	

##### Second: Testing The Normality Of The Measuring Tool

Table (2)'s findings demonstrate that the data used to analyze the variables under investigation have a normal distribution, suggesting that the study's conclusions can be applied to the population it was intended to study. Additionally, the alternative hypothesis, which asserts that the data under investigation do not follow a normal distribution at a significance level below (0.05), is rejected, while the null hypothesis, which asserts that the data fall into a normal distribution at a significance level greater than (0.05), is accepted.

**Table 2.** Test of the standardization of the measuring tool

Standards		Digital Transformation	Digital Entrepreneurship
Sample size		123	123
Poisson distribution parameter	Mean	3.24	3.75
	Standard deviation	1.047	1.071
(Kol-Smi)		0.165	0.165
(P.value)		P > 0.05	P > 0.05

##### Third: Testing The Stability Of The Measurement Tool

With a Cronbach's alpha coefficient of (0.974), distributed as (0.953) for the digital transformation variable and (0.951) for the digital entrepreneurship variable, Table (3)'s results demonstrate the stability of the items in the variables "digital transformation and digital entrepreneurship," remaining stable with the condition of the Cronbach's alpha coefficient stability.

Table 3. Cronbach's alpha coefficients

Variables	Dimensions	vertebrae	Cronbach's alpha	
Digital Transformation	Technology	4	0.953	0.833
	Digitalization of Operations	4		0.936
	Databases	3		0.854
	Human Resources	3		0.814
Digital Entrepreneurship	Digital Information Base	5	0.951	0.849
	Digital Business Environment	5		0.871
	Digital Skills and E-Leadership	5		0.814
	Finance	4		0.864
			0.974	

#### Fourth: Statistical Description of the Research

Table (4) indicates that the overall average for the digital transformation variable was (3.41), with a standard deviation of 1.14. This indicates the interest of private bank employees in the importance of digital transformation as a key element in improving performance and services. This interest stems from the support for the digitization of operations dimension, which recorded an arithmetic mean of 3.53 with a standard deviation of 1.31, indicating that banks recognize the vital role of technology in enhancing operational efficiency. Meanwhile, the database dimension came in the final stage, with an arithmetic mean of 3.21 and a standard deviation of 1.42. Table (4) also shows that the overall average of the digital entrepreneurship variable was 3.36 with a standard deviation of 1.07, indicating the interest of employees in private banks in the importance of digital entrepreneurship as a tool to enhance opportunities and increase market share. This interest came as a result of focusing on the digital business environment dimension, which recorded an arithmetic mean of 3.42 with a standard deviation of 1.30, indicating that banks realize the value of the benefits associated with the digital business environment and its positive impact on operations. While the digital information base dimension came in last place with an arithmetic mean of 3.27 and a standard deviation of 1.41.

Table 4. Statistical description of research variables

Dimensions	Mean	Standard deviation
Technology	3.43	1.39
Digitalization of Operations	3.531	1.31
Databases	3.21	1.42
Human Resources	3.45	1.37
Digital Transformation	3.41	1.14
Digital Information Base	3.27	1.45
Digital Business Environment	3.42	1.30
Digital Skills and E-Leadership	3.41	1.33
Finance	3.32	1.39
Digital Entrepreneurship	3.36	1.07



### Fifth: Testing the Research Hypotheses

H1: "There is a significant correlation between digital transformation and digital entrepreneurship", from which the following hypotheses branch out:

The results of Table (5) of the correlation matrix indicate the following:

- 1) "There is a strong correlation between digital transformation and digital entrepreneurship, with a coefficient of 0.868, indicating that commercial banks have a strong interest in integrating digital technology into digital entrepreneurship and promoting innovation in this field".
2. "There is a strong correlation between the technology dimension and digital entrepreneurship, with a coefficient of 0.832, indicating that commercial banks have a strong interest in integrating digital technology into digital entrepreneurship and promoting innovation in this field".
3. "There is a strong correlation between the process digitization dimension and digital entrepreneurship, with a coefficient of 0.851, indicating that commercial banks have a strong interest in digitizing processes in digital entrepreneurship in order to provide better services".
- 4 "There is a strong correlation between the database dimension and digital entrepreneurship, amounting to 0.813, indicating that commercial banks have a strong interest in using databases in digital entrepreneurship and enhancing their customer database".
- 5 "There is a strong correlation between the human resources dimension and digital entrepreneurship, amounting to 0.773, indicating that commercial banks have a strong interest in integrating human resources into digital entrepreneurship, which contributes to creating new opportunities for the banks in the study sample".

**Table 5.** Correlation Matrix

	<b>Technology</b>	<b>Digitalization of Operations</b>	<b>Databases</b>	<b>Human Resources</b>	<b>Digital Transformation</b>
<b>Technology</b>	.753**	.756**	.656**	.786**	.760**
<b>Digitalization of Operations</b>	.721**	.729**	.762**	.681**	.765**
<b>Databases</b>	.733**	.739**	.747**	.694**	.762**
<b>Human Resources</b>	.762**	.769**	.735**	.690**	.792**
<b>Digital Transformation</b>	.832**	.851**	.813**	.773**	.868**

H2: There is a significant impact of digital transformation on financial technology, from which the following hypotheses branch out:

"The results of Table (6) show that digital transformation contributes to enhancing the capabilities of digital entrepreneurship in private banks, thus increasing the efficiency of implementing digital entrepreneurship. This indicates that increasing digital transformation by one unit leads to an improvement of 0.788, with a standard error of 0.056, resulting in a critical value of 17.152. Consequently, this relationship contributed to stimulating the capabilities and skills of information systems accountants to use digital transformation to explain 0.736 of digital entrepreneurship. This means that commercial banks benefit greatly from digital transformation, which enhances the efficiency of using digital entrepreneurship and leads to improved performance and innovation in the provision of financial services". Accordingly, the impact of digital transformation on digital entrepreneurship can be determined through the following equation:

$$Y = a + \beta X$$

Where:

Y = dependent variable (digital entrepreneurship) a

= regression parameter

$\beta$  = beta value

$X = \text{digital transformation}$

$$Y = 0.635 + 0.789 X$$

Suppose the value of ( $X=1$ ) then the equation becomes

$$Y = 0.635 + 0.789 * 1$$

$$Y = 0.635 + 0.789$$

$$Y = 1.424$$

**Table 6.** Results of the impact of digital transformation on digital entrepreneurship

	Path	a	$\beta$	S.R	C.V	F	R <sup>2</sup>	P
Digital Transformation	----> Digital Entrepreneurship	0.635	0.788	0.056	14.071	236.267	0.753	0.001

## 5. Conclusions And Recommendations

### First: Conclusions

- The results showed a significant correlation between digital transformation and digital entrepreneurship, which contributes to encouraging innovation in developing new financial products and services that meet changing market needs.
- The results showed that digital transformation helps banks improve the efficiency of internal operations, reducing transaction time. Furthermore, digital transformation processes can provide smoother and faster financial services, enhancing customer satisfaction and loyalty.
- Commercial private banks are keen to leverage digital transformation as it contributes to offering a wide range of new financial services, such as online banking and smartphone applications.
- Private banks focus on enhancing security by providing digital technology with advanced security systems, which reduces the risk of fraud and contributes to protecting customer data.
- Private banks focus on data analysis through the use of digital transformation, which enhances banks' ability to collect and analyze information and data, contributing to making important decisions to understand customer requirements.

### Second: Recommendations

- Private banks should update and develop their technological infrastructure to ensure the provision of efficient and secure services. This will improve the organization of training and development programs for employees to enhance their skills in digital entrepreneurship.
- Private banks should improve the customer experience by designing user-friendly interfaces for digital banking applications, which will ease customer access to services.
- Private banks should focus on activating cybersecurity, which will contribute to strengthening security systems to protect customers' financial data and sensitive information from cyber threats.
- Private banks should acquire a modern culture of innovation, which will contribute to improving a work environment that supports innovation and experimentation, which in turn will facilitate the development of new and innovative services.
- Private banks should leverage data analysis techniques to understand customer behavior and improve the services provided. This, in turn, will encourage customers to engage in the design of digital services and products by identifying their tastes.

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