

# An Empirical Study of Sources Affecting E-Business Value Creation in Jordanian Banking Services Sector

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**Abstract** Grounded in the technology–organization–environment (TOE) framework, we have developed an extended conceptual research model for assessing the value of e-business at the bank level. For the purposes of our research some constructs were added to (TOE) framework such as IT/Business strategy alignment, adequacy of IT professionals, and availability of online revenues. Other factors were excluded such as the global scope since our research is at the national level in Jordanian banking sector. Based on our enhanced framework, we have formulated eight hypotheses and identify eight factors (technology readiness or competence, bank size, financial resources commitment, IT/Business strategy alignment, adequacy of IT professionals, availability of online revenues, competition intensity or pressure, and regulatory support environment) that may affect value creation of carrying out e-business in Jordanian banking sector. Survey data from 140 employees in seven pioneered banks in the Jordanian banking services industry were collected and used to test the theoretical model. Based on simple and multiple linear regressions, our empirical analysis demonstrates several key findings: (1) technology readiness is found to have the strongest significant influence on the e-business value in banks. (2) Bank size, IT/Business strategy alignment, and availability of online revenues are found to have significant influence on the e-business value in banks, while financial resources commitment and adequacy of IT professionals do not contribute significantly to e-business value. (3) Both the competition intensity and regulatory support environment contribute significantly to value creation of e-business in banks. These findings indicate the usefulness of the proposed research model for studying e-business value in banks. They also provide insights for both business managers and policy-makers.

**Keywords:** e-business, e-business value, sources of value creation, technology-organization-environment (TOE) framework, bank performance, e-banking, Jordanian banking industry.

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## 1. Introduction

Electronic business (e-business) is a major force in the global economy. Businesses and consumers alike increasingly engage in e-business. Despite the burst of the dot-com bubble, many firms continue to deploy e-business extensively in their enterprise value chains. Indeed, firms face a series of obstacles in adopting and carrying out e-business, particularly their ability to transcend significant technical, managerial, and cultural issues [1]. Researchers and practitioners are struggling to determine whether e-business delivers value to firm performance, and if so, what factors contribute to e-business value?

The adoption, use, and value of electronic business (e-business) have emerged into an active research area in the information systems (IS) discipline [2]. Drawing on the literature [3, 4], we define e-business as using the Internet to conduct or support business activities along the value chain [5]. We focus on sales/services/marketing, internal operations, and coordination &

communication because we are studying banking services industry.

Value creation in e-business is one of the most important issues in deciding about e-business component investments. Amit and Zott (2001) discuss the sources of e-commerce value creation based on six different theoretical frameworks and summarize that each of them suggests possible sources of value creation [6].

Jordanian banks have invested heavily to leverage the Internet and transform their traditional businesses into e-businesses in the last ten years. Jordanian banks like their international counterparts have increasingly resorted to e-business to capitalize on the opportunities of business efficiencies. These banks adopted the B2C e-business model to increase market share, offer better customer service and to reach out to customers at greater geographic distances.

Why some banks adopted and conducted e-business in doing their financial transactions whereas others didn't is the problem that motivated this study, and because the lack of empirical examination of value

creation from e-business In Jordan banking sector is another motivation of this study. In that context, the aim of this study is to contribute to a better understanding of the value creation through the e-business and its application to the sector of financial services to commercial banks in Jordan.

E-Business value is an emerging and controversial term and so it has many different definitions. Which definition applies in context depends on how e-business and value are defined. It is the supposition of the authors of this research that e-business value could be defined as applying e-business to improve the business performance of the firm in terms of its impacts on sales, services, marketing, internal operations, communication and coordination in case of the availability of suitable technological, organizational and environmental contexts for the firm [7]. Hence, the e-business value construct represents an integrative measure of the level of Internet-enhanced business performance along these three dimensions [7].

An enhanced extended model based on assumptions of TOE framework has been developed, and explored the role and function of each element in the framework. It is expected that the extended model will provide a deeper insight toward creating the value in e-business strategies, ventures, applications and implementations. Then, we will test that model using survey data from banks in the banking services industry in Jordan that had already adopted e-business, i.e., Clicks-and-mortars banks which have supplemented their existing business using the Internet in their operations. We chose the above mentioned industry because it was one of the first movers to adopt the Internet technologies and to innovate with e-business applications. Data analysis will be performed to determine the role and influence of sources of value creation on e-business value creation and on bank performance. The results will contribute to the continued debate on IT payoffs and the new "IT value paradox" [8].

Our empirical survey was carried out in an interesting and homogenous market, the Jordanian Banking services industry sector. Jordan is one of the regionally leading countries regarding the national IT infrastructure available for online services. Also, the population's motivation and ability to conduct online transactions are one of the highest regionally.

## **2. Aims and Motivation for the Research**

In essence, e-business strategy formulation revolves around the concepts of value creation, its sources, and impacts on business performance, they are recognized the source of superior performance. Consideration of each of these various concepts and the relationships between them is necessary for a comprehensive understanding of e-business value creation in banks.

From both research and applied perspectives there are few studies published on this topic. There is a need to combine and concentrate the efforts of academic researchers in a holistic approach to e-business value creation. There is a limited understanding of what determines how the value is created in e-business and there is currently no tested framework that unifies all relevant concepts in an easy to understand and practical way. As such, one of the principal goals of this study is to develop an enhanced framework, which can explain value creation of e-business in banks. Such a framework would benefit research in e-business and also help to eliminate confusion as to where a bank should focus its e-business strategies and investments for optimum organizational performance.

The two reasons motivating the study presented in this paper are as follows. Firstly, skepticism about the value of e-business and information technology (IT) has been renewed recently, in part due to the gap between substantial firm spending on IT—particularly on Internet-related technologies—and the widespread perception about the lack of value from e-business. Nicholas Carr's article (2003) "IT Doesn't Matter" triggered a wave of debate over the new "IT value paradox" [9]. Today more than ever, IS researchers face strong pressure to answer the question of whether and how e-business investments create business value [10]. Answers to this renewed paradox will have important implications for the way firms approach IT investment and management [11].

Secondly, much of the existing research about understanding of e-business innovation has focused on the adoption decision and on measures such as "intent to adopt" and "adoption versus nonadoption" [12]. Thus, we need to view e-business diffusion, use, and value as a multistage process that starts at adoption and extends to usage and value creation [12], [13]. Furthermore, there is a lack of empirical evidence to gauge e-business usage and its impact on banks performance, partly because of the difficulty of developing measures and collecting data [14].

There is a lack of substantial empirical studies in e-business value creation, as the majority of studies reported in the literature still rely heavily on case studies and anecdotes, with few empirical data to measure Internet-based initiatives or gauge the scale of their impact on bank performance, partly because of the difficulty of developing measures and collecting data. A more fundamental issue is the lack of theory to guide the empirical work. So far, the literature has been weak in making the linkage between theory and measures. Hence, there is a need for theoretical development.

An auxiliary goal of the research is to concentrate the efforts of both academic researchers and banks managers on the elements of which e-business value is constructed, such as its sources. During the Internet boom years, Internet ventures often did not pay enough

attention to these fundamental concepts. Nowadays, though, economic viability of any e-business venture is of paramount importance to managers and investors alike. The concept of value creation is at the core of what a firm does, since only superior value creation vis-à-vis rivals opens up the opportunity for superior profitability. This is why we devote our efforts to conduct this study. Both academic researchers and banks managers spend considerable time looking for the best definition of e-business value. It is the contention of the author that this effort would be better spent on investigating ways to determine how e-business value is created in e-business and impacted at various levels of a bank. Relating these results to the bank performance would further e-business value research and help managers to improve bank performance by identifying sources of e-business value creation in their e-business models, ventures and strategies.

### 3. Statement of the Problem

As indicated above, it is the view of the authors that value creation is one of the most important issues in formulating e-business strategies and that value is a construct that is hard to define and even harder to model and understand [15]. Banks can develop a variety of e-business strategies to leverage their value for improved performance. However, a problem for managers, investors and researchers is to understand the value of these strategies and their links to performance improvements.

Broadly speaking, our study relates to the continued debate on information technology (IT) payoffs. The amount of empirical research on the business value of IT, and e-business in particular, has been diverse and yet limited both conceptually and methodologically. However, there is a scarcity of research into the value of the e-business strategies on the firm in terms of organizational performance.

In summary, the proposed outline for the general framework that will be developed and tested in this research is seen in Figure 1.1. It depicts the main statement of the problem. An important aspect of the problem is whether e-business value is created if the firm uses adequately the sources of e-business value creation.

### 4. Previous Work

A summary of some of the literature related to E-business value creation is given below.

Zhu and Kraemer (2005) developed theoretically and evaluated empirically an integrative research model incorporating technological, organizational, and environmental factors, for assessing e-business use and value at the firm level, based on which a series of hypotheses are developed. The theoretical model is

tested by using structural equation modeling (SEM) on a dataset of 624 firms across 10 countries in the retail industry. For e-business use, their study has examined six factors, within the TOE framework, as drivers of e-business use. For e-business value, their study has demonstrated that the extent of e-business use and e-business capabilities, both front-end functionalities and back-end integration, contribute to value creation of e-business. The study found that technology competence, firm size, financial commitment, competitive pressure, and regulatory support are important antecedents of e-business use. In addition, the study found that, while both front-end and back-end capabilities contribute to e-business value, back-end integration has a much stronger impact [16].

Zhu et al., (2004) developed a research model for assessing the value of e-business at the firm level. Based on this framework, they formulated six hypotheses and identify six factors (technology readiness, firm size, global scope, financial resources, competition intensity, and regulatory environment) that may affect value creation of e-business [10].

Zhu et al., (2003) Based on (TOE) framework they examined the factors: Technology competence, Organizational factors (firm scope, size) and Environmental context (consumer readiness, trading partner readiness, competitive pressure) for studying E-business adoption by European firms using a survey on a sample size of (3100) firms [17].

Kuan and Chau (2001) confirmed the usefulness of the TOE framework for studying adoption of complex IS innovations. Based on (TOE) framework they examined the factors: Technological context (perceived direct benefits), Organizational context (perceived financial cost, technical competence) and Environmental context (perceived industry pressure/government pressure) for studying EDI innovation using a survey on a sample size of (575) firms [18].

Ramamurthy et al. (1999) posited the impact of EDI on firm performance as the consequence of technological, organizational, and environmental factors. Based on (TOE) framework they examined the factors: Organizational factor (management support, expected benefits, resource intensity, compatibility, costs) and Interorganizational factor (competitive pressure, customer support) for studying EDI innovation using a survey on a sample size of (181) firms. Their empirical results indicated that the impact of EDI on operational and market-oriented performance was significantly affected by these factors [19].

Thong (1999) Based on (TOE) framework he examined the factors: CEO characteristics (CEO's innovativeness and IS knowledge), IS characteristics (relative advantage/compatibility, complexity), Organizational characteristics (business size, employees IS knowledge) and Environmental

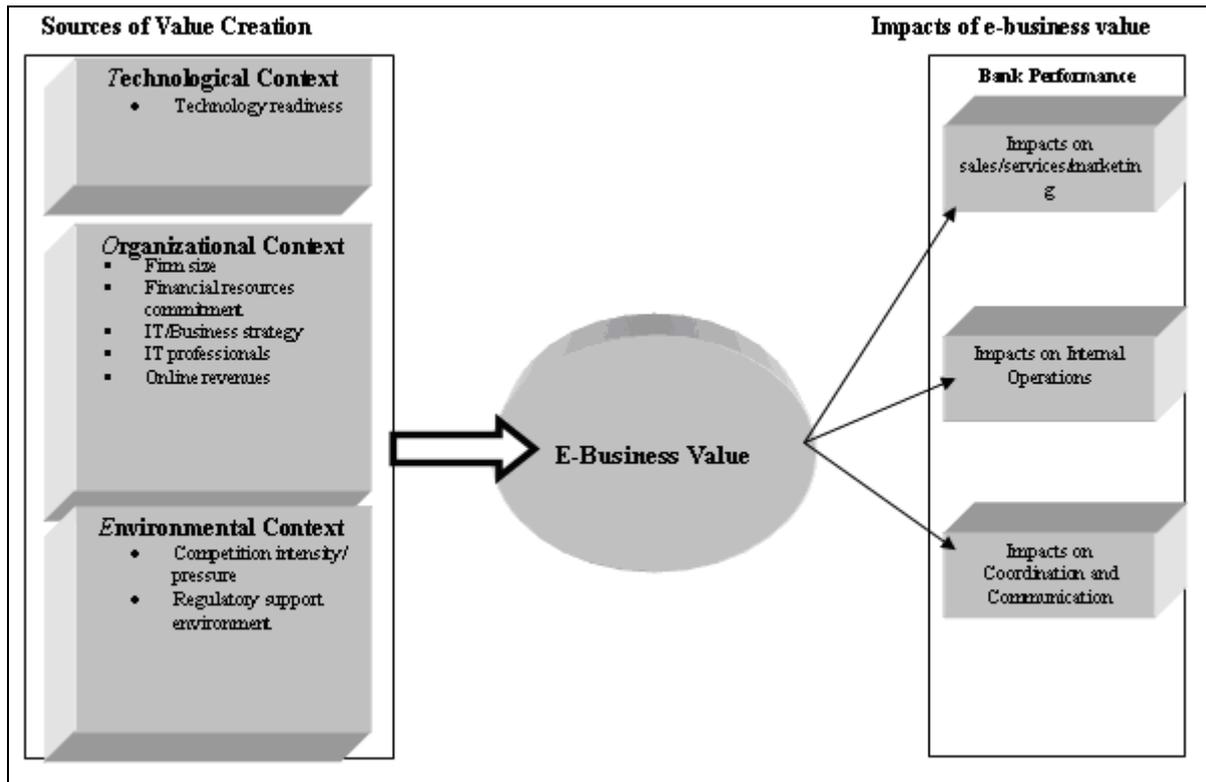


Figure 1. An extended framework for e-business value creation (by researchers)

characteristics, for studying and developing an integrated model of information systems adoption in small business using a survey on a sample size of (168) firms [20].

Iacovou et al. (1995) developed a model formulating three aspects of Electronic Data Interchange (EDI) adoption—technological factors (perceived benefits), organizational factors (organizational readiness), and environmental factors (Interorganizational context and external pressure)—as the main drivers for EDI adoption, and examined the model using seven case studies. Iacovou et al., using the technology-organization-environment (TOE) framework, found that the impact of EDI on performance was directly affected by its level of integration with other IS and processes. Their model was further tested by other researchers using larger samples [21].

## 5. The Research Hypotheses

To examine the points previously discussed and address the issues raised, we have formulated the following eight hypotheses based on the Figure 1.1.

H1: The technology readiness or competence positively affects e-business value creation in the bank.

H2: The bank size negatively affects e-business value creation in the bank.

H3: The financial resources commitment positively affects e-business value creation in the bank.

H4: The alignment of IT strategy with Business strategy positively affects e-business value creation in the bank.

H5: The availability of online revenues positively affects e-business value creation in the bank.

H6: The adequacy of IT professionals positively affects e-business value creation in the bank.

H7: The competition intensity or pressure negatively affects e-business value creation in the bank.

H8: The regulatory support environment positively affects e-business value creation in the bank.

## 6. Research Findings: Testing the Theoretical Hypotheses

### 6.1. Hypothesis H1 Technological Context vs. e-business Value

Tables 1 and 2 summarize the results of simple linear regression for hypothesis 1. The table shows the standardized regression coefficient of each predictor,  $R$ ,  $R^2$  and  $F$ , for all the predictors in linear regression analysis. The standardized regression coefficient represents the correlation coefficient between the independent variables and the dependent variable (i.e., e-business value).

The entire model has a significant effect on e-business value ( $p < 0.01$ ).  $R^2$  In the entire model of the technological context explains 13.8% of the variance

Table 1. Results of Simple Regression Analysis for e-business Value vs. Technological Context

Model~	Standardised Coefficient	t
<b>Technology readiness (H1)</b>	<b>.372</b>	<b>4.703**</b>
<b>Equation</b>		
<b>R</b>	<b>.372</b>	
<b>R<sup>2</sup></b>	<b>.138</b>	
<b>F</b>	<b>22.116**</b>	

\*\*p<.01 \*p<.05 ~ dependent variable: e-business value

related to e-business value. As shown in Table 1, the standardized coefficient (beta) value for the technological context is positive and significant (p<.01), and thus supports hypothesis H1.

Table 2. Results of Multiple Regression Analysis for Dimensions of e-business Value vs. Technological Context

Independent	e-business Value Dimensions(Dependent)		
	Sales/services/marketing	Internal operations	Coordination and communication
<b>Technological Context</b>	<b>R<sup>2</sup> =.074</b> <b>F=11.038**</b>	<b>R<sup>2</sup> =.064</b> <b>F=9.514**</b>	<b>R<sup>2</sup> =.187</b> <b>F=31.718**</b>
<b>Technology readiness (H1)</b>	<b>β=.272</b> <b>t=3.322**</b>	<b>β=.254</b> <b>t=3.084**</b>	<b>β=.432</b> <b>t=5.632**</b>

\*\*p<.01, \*p<.05

## 6.2. Hypotheses H2-H6 Organizational Context vs. e-business Value

The entire model has a significant effect on e-business value (p<0.01). R<sup>2</sup> In the entire model of the organisational context explains 54.6% of the variance related to e-business value. As shown in Table 3, the standardized coefficient (beta) value for the bank size is positive and significant (p<.01), and thus does not support hypothesis H2. The standardised coefficient (beta) value for the financial resources commitment is positive but is not significant and thus, the result does not support hypothesis H3. The standardised coefficient (beta) value for the IT/Business strategy alignment is positive and significant (p<.01), and thus supports hypothesis H4. The standardised coefficient (beta) value for the IT professionals is positive but is not significant and thus, the result does not support hypothesis H5. The standardised coefficient (beta) value for the online revenues is positive and significant (p<.05), and thus supports hypothesis H6. Further, IT/Business strategy alignment contributes more to e-business value creation than the other sources.

Table 4 shows the dependent variable as three dimensions of e-business value are: sales-services-

marketing, internal operations and coordination & communication. The technological context explains 7.4% of the variance of sales-services-marketing as a dimension of e-business value, 6.4% of the variance of internal operations as a dimension of e-business value, and 18.7% of the variance of coordination and communication as a dimension of e-business value. Furthermore, the technology readiness contributes more significantly to e-business value as coordination and communication (0.432) more than to e-business value as internal operations and sales-services-marketing (0.254, 0.272) respectively

marketing, internal operations and coordination & communication. All of the organizational context variables explain 44.4% of the variance of sales-

Table 3. Results of Multiple Regression Analysis for e-business Value vs. Organisational Context

Model~	Standardised Coefficient	t
<b>Bank Size (H2)</b>	<b>0.215</b>	<b>3.643**</b>
<b>Financial Resources Commitment (H3)</b>	<b>0.090</b>	<b>1.236</b>
<b>IT/Business Strategy (H4)</b>	<b>0.573</b>	<b>7.110**</b>
<b>IT Professionals (H5)</b>	<b>0.013</b>	<b>0.178</b>
<b>Online Revenues (H6)</b>	<b>0.132</b>	<b>1.923*</b>
<b>Equation</b>		
<b>R</b>	<b>0.739</b>	
<b>R<sup>2</sup></b>	<b>0.546</b>	
<b>F</b>	<b>32.262**</b>	

\*\*p<.01 \*p<.05 ~ dependent variable: e-business value

services-marketing as a dimension of e-business value, 33.6% of the variance of internal operations as a dimension of e-business value, and 50.9% of the variance of coordination and communication as a dimension of e-business value.

Table 4. Results of Multiple Regression Analysis for Dimensions of e-business Value vs. Organisational Context

Independent	e-business Value Dimensions(Dependent)		
	Sales/services/marketing	Internal operations	Coordination and communication
Organisational Context	$R^2 = .444$ $F=21.417^{**}$	$R^2 = .336$ $F=13.566^{**}$	$R^2 = .509$ $F=27.778^{**}$
Bank size (H2)	$\beta=.271$ $t=4.159^{**}$	$\beta=.084$ $t=1.185$	$\beta=.199$ $t=3.240^{**}$
Financial Resources Commitment (H3)	$\beta=.027$ $t=.338$	$\beta=.124$ $t=1.401$	$\beta=.086$ $t=1.127$
IT/Business Strategy (H4)	$\beta=.543$ $t=6.087^{**}$	$\beta=.476$ $t=4.880^{**}$	$\beta=.475$ $t=5.665^{**}$
IT Professionals (H5)	$\beta=-.014$ $t=-.175$	$\beta=-.144$ $t=-1.663$	$\beta=.105$ $t=1.469$
Online Revenues (H6)	$\beta=.104$ $t=1.371$	$\beta=.136$ $t=1.644$	$\beta=.174$ $t=2.335^*$

\*\*p<.01, \*p<.05

On the other hand, the bank size contributes significantly to e-business value as sales-services-marketing and coordination & communication (0.271, 0.199) respectively , but the financial resources commitment don't contribute significantly to e-business value in any dimension, while IT/Business strategy alignment contributes significantly to e-business value as sales-services-marketing, internal operations and coordination & communication (0.543, 0.476, 0.475) respectively ,but the online revenues contributes significantly to e-business value as coordination & communication (0.174) respectively. Finally, the IT professionals don't contribute significantly to e-business value in any dimension.

### 6.3. Hypotheses H7-H8 Environmental Context vs. e-business Value

The entire model has a significant effect on e-business value (p<0.01).  $R^2$  In the entire model of the environmental context explains 29.7% of the variance related to e-business value. As shown in Table 5, the standardized coefficient (beta) value for the

competition intensity is positive and significant (p<.01), and thus does not supports hypothesis H7. The standardised coefficient (beta) value for the regulatory support environment is positive and significant (p<.01), and thus supports hypothesis H8.

Table 5. Results of Multiple Regression Analysis for e-business Value vs. Environmental Context

Model~	Standardised Coefficient	t
Competition Intensity (H7)	0.363	4.801**
Regulatory Support Environment (H8)	0.306	4.041**
<b>Equation</b>		
R	0.545	
$R^2$	0.297	
F	28.902**	

\*\*p<.01 \*p<.05 ~ dependent variable : e-business value

Table 6. Results of Multiple Regression Analysis for Dimensions of e-business Value vs. Environmental Context

Independent	e-business Value Dimensions(Dependent)		
	Sales/services/marketing	Internal operations	Coordination and communication
Environmental Context	$R^2 = .329$ $F=33.540^{**}$	$R^2 = .124$ $F=9.717^{**}$	$R^2 = .238$ $F=21.430^{**}$
Competition Intensity (H7)	$\beta=.392$ $t=5.305^{**}$	$\beta=.219$ $t=2.596^*$	$\beta=.330$ $t=4.192^{**}$
Regulatory Support Environment (H8)	$\beta=.311$ $t=4.205^{**}$	$\beta=.214$ $t=2.540^*$	$\beta=.269$ $t=3.415^{**}$

\*\*p<.01, \*p<.05

Table 6 shows the dependent variable as three dimensions of e-business value are: sales-services-marketing, internal operations and coordination & communication. All of the environmental context variables explain 32.9% of the variance of sales-services-marketing as a dimension of e-business value,

12.4% of the variance of internal operations as a dimension of e-business value, and 23.8% of the variance of coordination and communication as a dimension of e-business value.

On the other hand, the competition intensity contributes significantly to e-business value as sales-

services-marketing, internal operations and coordination & communication (0.392, 0.219, 0.330) respectively, but the regulatory support environment contributes significantly to e-business value as sales-services-marketing, internal operations and coordination & communication (0.311, 0.214, 0.269) respectively.

## 7. Conclusion

The main purpose of this research is to provide a context for better understanding of e-business value and how the sources of e-business value creation are necessary for e-business value and banks performance.

Many managers and investors are facing strong pressure to answer the question of whether and how e-business investments create business value, because it is not clear to them how this value is created, and what are the factors that shape that value, also which of them are most important. This study will help managers and banks to define their e-business value more effectively. This study endeavors to find a conceptual model that joins and classifies these sources, unifying them with e-business value and bank performance. Both academics and managers will have a theory and practical base to understand e-business value through its effect on three dimensions of bank performance are: sales-services-marketing, internal operations and coordination & communication. Also, the model will be empirically tested through an integrative framework, joined with the above concepts and analyzed in the context of commercial banks in Jordan that carrying out e-business (i.e., e-banking).

The current research is limited to one industry type, the banking services as belong to the financial services industry. Nonetheless, other domains in the financial services industry (e.g., securities, brokerage, credit institutions, trading, loan, mortgage, credit cards and real estate) can be studied. As well, a wide variety of industries (e.g., manufacturing, retailing, Telecommunications, transportation, services) would improve the generalisability of the research findings. Since there are many applications of e-business, such as e-CRM, e-SCM, e-Marketing, etc.). Future contributions could be made to the research by checking whether or not an e-business application effectively deployed in an organization can create value.

The current study was conducted only in Jordan, and so future cross-cultural research would be valuable. It is assumed that there will be, to some degree, a difference in the factors affecting the creation of e-business value across different cultures.

We focused our study on banks carrying out e-business that enabled transactions in which individual consumers were involved. They called "B-to-C" (business-to-consumer), which are firms that directly and exclusively engage in transactions with individual

customers. As a future research, we can sample businesses that solely engaged in commercial activities with other business (so-called "B-to-B", or "business-to-business" companies). Moreover, A suggested future studies can be done based on the firm size (large, medium, small); on years of experience on the web (up to 5, more than 5); or based on the organizational form (traditional "brick-and-mortar" companies, spin-offs, electronic commerce start-ups, click-and-mortar).

This study has helped to develop our understanding of the e-business value as an outcome for carrying out e-business in the banking services industry, a sector where the lack of empirical academic studies is striking due to the novelty of the phenomenon. Drawing on a conceptual framework that can be used to assess the extent to which any e-business venture is likely to create business value in terms of improvements on sales-services-marketing, internal operations, and coordination & communication, the study has offered both theoretical and empirical contributions relating to the value creation of e-business to banks. In essence, this study - including both the analytical framework presented and the empirical findings - has demonstrated the complexity of issues concerning e-business value creation for banks and subsequent adoption/rejection decisions of carrying out e-business in their banks (i.e., e-banking), and thus highlighted the need for contextual, service-specific perspectives in research as well as practitioner decision making on these matters.

In this study, we have discussed an interesting, but not entirely adopted and applied topic: value creation in e-business. Empirical studies on e-business ventures and applications, their value are rare. Thus, this study is one of the first ignitions to start academic and practitioners' discussion on the theme. Moreover, as far as we know this study is one of the first in Jordan that has attempted to evaluate the value of carrying out e-business in banking services industry (i.e., e-banking).

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