An Exploratory Study of the Drivers of E-Business Value Creation in the Jordanian Banking Sector

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Abstract
Based on the Amit and Zott e-Value 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 parameters were added to or excluded from e-Value framework since our research is at the national level in Jordanian banking sector. Based on the extended framework, we have formulated four hypotheses and identify four factors (efficiency, complementarities, lock-in, and novelty) 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 sector were collected and used to test the theoretical model. Based on simple and multiple linear regressions, our empirical analysis demonstrates several key findings: (1) Together, the efficiency, complementarities, lock-in and novelty factors strengthen e-business value as the hypotheses are supported. (2) the novelty is the strongest driver for e-business value creation than the other drivers efficiency, lock-in and complementarities (3) all of the drivers efficiency, complementarities, lock-in and novelty explain to the high degree the variance of sales-services-marketing as a dimension of e-business value, then to the middle degree the variance of internal operations as a dimension of e-business value, and to the low degree the variance of coordination and communication as a dimension of e-business value. 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 to betterment the bank performance in terms of sales-services-marketing; internal operations and coordination & communication.

Keywords: e-business, e-business value, drivers of value creation, e-Value framework, bank performance, e-banking, Jordanian banking sector.

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 [24].
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 [23].

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 [22].

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 author 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 [15].

An enhanced extended model based on assumptions of e-Value 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 drivers 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].

The application of computing and telecommunication technologies in business activities can improve the efficiency of the value chain, thus enhancing the value created by an organization. Amit and Zott (2001) suggested that using the Internet to conduct business can enhance value creation in four dimensions, namely efficiency, complementarities, lock-in and novelty. The application of technologies also allows an organization to create new value by performing business activities in a manner that may not be feasible without application of the technologies and hence establish a new value proposition.

Specifically, how do e-marketplaces create value? Amit and Zott (2001) identify four sets of values being created by e-business: search and transaction cost efficiency, complementarities, lock-in, and novelty. Search and transaction cost efficiency enables faster and more informed decision making, wider product and service selection, and greater economies of scale (cost savings per unit as greater quantities are produced) through demand and supply aggregation for small buyers and sellers. Complementarities involve bundling some goods and services together to provide more value than offering them separately. Lock-in is attributable to the high switching cost that ties customers to particular suppliers. Novelty creates value through innovative ways for structuring transactions, connecting partners, and fostering new markets.

Bakos (1991) identifies similar values: reduced search cost, significant switching cost, economies of scale and scope, and network externality (the tendency for consumers to place more value on a good or service as more of the market uses that good or service). Bakos regards search cost reduction as the single attribute most specific to e-marketplaces. It is the subject of analysis in many studies on e-marketplaces. In addition, e-business can achieve lock-in by leveraging various interactive applications such as loyalty programs, virtual communities, and customization (Amit and Zott 2001).
Amit and Zott (2001) advocate that business conducted over the Internet in the 21st century with its dynamic, rapidly growing and highly competitive characteristics promises new avenues for the creation of wealth. E-business models, methods and the volume of digitization vary from industry to industry and from organization to organization depending on their size, nature of business, technology capability and in-house technical expertise. Although the value of adopting e-business has been recognized, actual achievements from it are not known.

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 [23].

2. AIMS AND MOTIVATION FOR THE RESEARCH

In essence, e-business strategy formulation revolves around the concepts of value creation, the drivers, and the 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 [7].

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 [15].

The two reasons motivating the study presented in this paper are as follows. Firstly, 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].

Secondly, 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. 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 drivers. 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. [22] 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 drivers of e-business value creation in their e-business models, ventures and strategies [24].
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. It depicts the main statement of the problem. An important aspect of the problem is whether e-business value is created if the firm achieves adequately the drivers of e-business value creation.
FIGURE 1: An Extended Framework for e-business value creation (By Researchers)

**Drivers of Value Creation**

**Efficiency**
- volume of revenues and services
- global marketing reach
- lead times
- errors and returned financial transactions
- overall costs of bank
- transparency of transactions

**Complementarities**
- wider and variety services bundling
- complete service solutions
- Combination of on-line and off-line transactions, resources and capabilities
- integration of activities or processes
- changing business relationships in the bank value chain
- access to products and services that are complementary to the primary product or service of interest

**Lock-In**
- personalization
- virtual communities
- trustworthy relationships
- Affiliate or fidelity programs
- one focal contact point

**Novelty**
- New novelty of products, services, and information.
- Presentation of new features and properties for its services and products.
- Re-structuring of its transactions and processes.

**Impacts of e-business value**

**Bank Performance**

- Impacts on sales/services/marketing
- Impacts on Internal Operations
- Impacts on Coordination and Communication
4. E-BUSINESS IN JORDANIAN BANKING SECTOR
The financial sector in Jordan has witnessed media blitzes announcing electronic banking. Banks that have implemented e-banking are showing up of being modernized; some of those that have not are drastically trying to catch up.

The financial sector in Jordan is composed of the Central Bank of Jordan (CBJ), 27 commercial and/or investment banks, 27 insurance companies, 8 special credit institutions, the Social Security Corporation, a number of provident funds, and foreign exchange bureaus. It is considered as one of the better financial sectors in the region and generates in total close to 5% of the GDP (Gross Domestic Product). One of the weakest points in the financial sector is, with the exception of mortgage lending, the lack of long-term lending and the absence of secured loans (www.abj.org.jo, accessed on 12/8/2007).

It is worth mentioning that the percentage of Jordanian households who own personal computer 15.9%, Internet access 6%, 1,000,000 regular telephone lines, around a 1.6 million mobile telephony subscribers, 21 licensed Internet service providers, more than 500,000 Internet users and close to 250 Internet cafes in the year 2004. However, Jordan is in the Guinness Book of World Records as the highest per capita in Internet cafes, and the number of Internet cafes located in the city of Irbid, is ranked number one in the world, with regard to so many Internet cafes located in a small region. It is worth mentioning that the number of Internet users in the world will reach three billion in year 2010 (www.moict.gov.jo, accessed on 1/9/2007).

The banking sector is very dynamic and liberal in Jordan. Moreover, some of the commercial banks in Jordan are offering electronic services. Samples of these services are:

(1) Internet banking: Arab Bank is the first bank to launch Internet banking service. This service has been started in Jordan in May 2000.
(2) Internet Shopping Card (ISC): it provides convenient and easy access to on-line shopping transactions with small limits and it can be used at any website that displays the Visa logo.
(3) WAP banking: customers can use WAP mobile phone and access their accounts.
(4) SMS banking: customers can use a mobile and access their accounts.
(5) Phone bank service: This provides access to customers’ accounts.
(6) On-line stock trading: Jordan Kuwait Bank (JKB) offers this service in collaboration with its affiliate United Financial Investment Co. (UFICO). The service allows JKB customers to trade in Amman Bourse through UFICO’s website and settle the value of shares traded through JKB’s Internet banking service (Net banker) directly from their accounts with the bank.
(7) Net banker: for performing banking transactions.
(8) Mobile Banking: this service allows the customers to perform banking transactions by using a mobile.
(9) Automated Teller Machines (ATM): The banks are providing ATM services through their branches.
(10) Cyber branch: Jordan Kuwait Bank (JKB) opened its first Cyber branch on the first of May 2001 in Sweifiyyah area. It is a comprehensive electronic bank providing banking services directly to the clients on a 24 hours basis.
(11) Money transfer: money transfer service allows customers to transfer and receive money.
(12) Pre-paid mobile cards: customers can buy the mobile prepaid cards electronically.
(13) Banking via SMS: it enables the customers to receive information on their transactions through their mobile telephones.
(14) E-com card: the E-com card is a pre-paid electronic card, which allows you to buy any product of the World Wide Web, the phone or mail order. This new product at Jordan National Bank (JNB) can help you minimize the risk of using your credit card on the Internet since the card has a fixed limit 25 JD. After you have used your card’s limit you can re-charge it within the card’s validity without the need for re-issuing a new card.
(15) The call free hotline: the customer can call the bank free of charge. The bank staff will answer all inquiries.
(16) WAP phone services: current account and savings account customers are eligible for using this service to facilitate balance inquiry, obtaining a simplified account statement, demanding a balance statement, demanding a checkbook.

5. THE AMIT AND ZOTT E-VALUE FRAMEWORK
Amit and Zott’s article on value creation in e-business has appeared in 2001. As firms can have several business models that need to be evaluated, Amit and Zott offer an eValue-creation
framework against which these various business models can be measured. The framework is depicted in Figure 2; this framework is called 4-clover.

Amit and Zott (2001, 2002) have suggested that the creation of economic value be evaluated in light of four factors: efficiency, complementarities, novelty and lock-in. Efficiency refers essentially to a reduction in transaction costs stemming from the speed of such transactions, the degree of automation of operations, the comprehensiveness of information, and the ease with which participants can initiate transactions. Complementarities primarily concern the bundling of resources and the capacities of the technologies used, and the bundling of products and services. Lock-in arises, instead, from the direct benefits offered to customers, e.g. price reductions. It encompasses factors that contribute to the trust and reliability accorded the technological solution, network effects and the investment required of the customer to gain access to this technological solution. As for novelty, it refers to the design and adoption of new ways of doing business in an industry sector by linking existing (or new) participants or by introducing new mechanisms.

Figure 2 depicts the four drivers of value creation in e-business. The term “value” refers to the total value created in e-business transactions regardless of whether it is the firm, the customer, or any other participant in the transaction who appropriates that value. We therefore adopt Brandenburger and Stuart’s (1996) view of total value created as the sum of the values appropriated by each party involved in a transaction. Each of the four major value drivers that were identified in the analysis- efficiency, complementarities, lock-in, and novelty- and the linkages among them, are discussed below. We suggest that the presence of these value drivers, which are anchored in the received entrepreneurship and strategic management theory, enhances the value-creation potential of e-business.

**FIGURE 2:** The Four Key value drivers for value creation in e-business (Amit and Zott, 2001)

5.1 Efficiency

Transaction efficiency as one of the primary value drivers for e-business, is consistent with transaction costs theory (Williamson, 1989), suggests that transaction efficiency increases when the costs per transaction decrease. Therefore, the greater the transaction efficiency gains that are enabled by a particular e-business, the lower the costs and hence the more valuable it will be.

Efficiency enhancements relative to off-line businesses (i.e., those of companies operating in traditional markets), and relative to other online businesses (i.e., those of companies operating in virtual markets), can be realized in a number of ways. One is by reducing information asymmetries between buyers and sellers through the supply of up-to-date and comprehensive information. The speed and facility with which information can be transmitted via the Internet makes this approach convenient and easy. Improved information can also reduce customers’ search and bargaining costs (Lucking-Reiley and Spulber, 2000), as well as opportunistic behavior. By leveraging the cheap interconnectivity of virtual markets, e-businesses further enhance transaction efficiency by enabling faster and more informed decision-making. As well, they provide for greater selection at lower costs by reducing distribution costs, streamlining inventory management, simplifying transactions (thus reduce the likelihood of mistakes), allowing individual customers to benefit from scale economies through demand aggregation and bulk purchasing, streamlining the supply chain, and speeding up transaction processing and order fulfillment, thereby benefiting both vendors and customers. In a recent study, Garciano
and Kaplan (2000) find that using an online rather than an off-line auction format for trading cars between businesses halves transaction costs. Marketing and sales costs, transaction-processing costs, and communication costs, can also be reduced in an efficient e-business, and the firm’s value-creating potential can be enhanced through scalability (i.e., increasing the number of transactions that flow through the e-business platform).

5.2 Complementarities

Complementarities are present whenever having a bundle of goods together provides more value than the total value of having each of the goods separately. In the strategy literature, Brandenburger and Nalebuff (1996) have highlighted the importance of providing complementary outputs to customers. They state that, “A player is your complementor if customers value your product more when they have the other player’s product than when they have your product alone”. RBV theory also highlights the role of complementarities among strategic assets as a source of value creation (Amit and Schoemaker, 1993); and network theory highlights the importance of complementarities among the participants in the network (Gulati, 1999). Hence, complementarities can be expected to increase value by enabling revenue increases.

E-businesses leverage this potential for value creation by offering bundles of complementary products and services to their customers. These complementary goods may be vertical complementarities (e.g., after-sales services) or horizontal complementarities (e.g., one-stop shopping, or cameras and films) that are provided by partner firms. They are often directly related to a core transaction enabled by the firm.

In case off-line assets complement online offerings. Customers who buy products over the Internet value the possibility of getting after-sales service offered through bricks-and-mortar retail outlets, including the convenience of returning or exchanging merchandise. This complementarity between on and off-line businesses is the essence of “click-and-mortar” offerings.

It is desirable for e-businesses to offer complementary goods that may not be directly related to the core transactions. E-businesses may also create value by capitalizing on complementarities among activities such as supply-chain integration, and complementarities among technologies such as linking the imaging technology of one business with the Internet communication technology of another, thereby unleashing hidden value.

5.3 Lock-In

The value-creating potential of an e-business is enhanced by the extent to which customers are motivated to engage in repeat transactions (which tends to increase transaction volume), and by the extent to which strategic partners have incentives to maintain and improve their associations (which may result in both increased willingness to pay of customers and lower opportunity costs for firms). These value-creating attributes of an e-business can be achieved through “lock-in”. Lock-in prevents the migration of customers and strategic partners to competitors, thus creating value in the aforementioned ways. Lock-in is manifested as switching costs, which are anchored in Williamson’s transaction cost framework, and as network externalities, which has its roots in network theory (Katz and Shapiro, 1985; Shapiro and Varian, 1999). It should also be noted that, as RBV theory suggests, a firm’s strategic assets, such as its brand name, and buyer-seller trust, both contribute to lock-in.

There are several ways in which customer retention can be enhanced. First, loyalty programs (Shapiro and Varian, 1999) rewarding repeat customers with special bonuses can be established. Second, firms can develop dominant design proprietary standards (Teece, 1987) for business processes, products, and services (e.g., Amazon’s patented shopping cart). Third, firms can establish trustful relationships with customers, for example, by offering them transaction safety and reliability guaranteed by independent and highly credible third parties. To the extent that customers develop trust in an e-business company through such measures, they are more likely to remain loyal to the site rather than switch to a competitor.

Familiarity with the interface design of a web site requires customer learning; once this learning has begun, it inhibits customers from switching to other sites where their learning would have to begin again (Smith, Bailey and Brynjolfsson, 1999). This argument gains strength when opportunities for customization (initiated by the customer) and presonalization (initiated by the e-business) are exploited. E-businesses enhance lock-in by enabling customers to customize products, services, or information to their individual needs in a variety of ways.
Virtual markets also enable e-business firms to create virtual communities that bond participants to a particular e-business (Hagel and Armstrong, 1997). Such communities enable frequent interactions on a wide range of topics and thereby create a loyalty and enhance transaction frequency. We note how all of the above measures use and leverage the unique characteristics introduced by virtual markets, such as high interconnectivity, speed of information processing, and lack of geographical constraints. Given the enormous reach of virtual markets, e-business firms often connect numerous parties that participate in commercial transactions. They can thus be considered network generators. In the context of e-business, network externalities are present when the value created for customers’ increases with the size of the customer base.

5.4 Novelty

The value-creation potential of innovations has been articulated by Schumpeter. While the introduction of new products or services, new methods of production, distribution, or marketing, or the tapping of new markets has been the traditional sources of value creation through innovations. E-businesses also innovate in the ways they do business, that is, in the structuring of transactions.

The unique characteristics of virtual markets (i.e., the removal of geographical and physical constraints, possible reversal of information flows from customers to vendors, and other novel information bundling and channeling techniques) make the possibilities for innovation seem endless. Another dimension of innovation in e-business refers to the appropriate selection of participating parties.

There can be substantial first-mover advantages for e-business innovators (Lieberman and Montgomery, 1988). Being the first to market with a novel business method makes it easier to create switching costs by capturing “mindshare”, and by developing brand awareness and reputation.

Novelty and lock-in, two of the four value drivers in our model, are linked in two important ways. First, e-business innovators have an advantage in attracting and retaining customers, especially in conjunction with a strong brand. Second, being first to market is an essential prerequisite to being successful in markets that are characterized by increasing returns (Arthur, 1996; Shapiro and Varian, 1999).

Novelty is also linked with complementarities. The main innovation of some e-businesses resides in their complementary elements, such as the resources and capabilities they combine (e.g., Goshal and Moran, 1996).

Finally, there is also an important relationship between novelty and efficiency. Certain efficiency features of e-businesses may be due to novel assets that can be created and exploited in the context of virtual markets.

5. PREVIOUS WORKS

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

Amit and Zott (2001) studied E-commerce business value for Internet companies through exploring the theoretical foundations of value creation in e-business by examining how 59 American and European e-businesses that have recently become publicly traded corporations, create value. They observed that in e-business new value can be created by the ways in which transactions are enabled. Grounded in the rich data obtained from case study analyses and in the received theory in entrepreneurship and strategic management, they developed a model of the sources of value creation. Their e-value drivers model suggests that the value-creation potential of e-businesses hinges on four interdependent dimensions, namely: efficiency, complementarities, lock-in, and novelty. The findings suggest that no single entrepreneurship or strategic management theory can fully explain the value-creation potential of e-business. Rather, an integration of the received theoretical perspectives on value creation is needed. To enable such integration, they offered the business-model construct as a unit of analysis for future research on value creation in e-business. A business model depicts the design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities. They proposed that a firm’s business model is an important locus of innovation and a crucial source of value creation for the firm and its suppliers, partners, and customers. They used cross-case analysis of a unique data set, in order to identify common
patterns of value creation in e-business. The analysis led to the development of the value-drivers model, which includes four factors that enhance the value creation potential of e-business: efficiency, complementarities, lock-in, and novelty.

Christensen and Methlie (2003), sought to explore value creation through e-business by emphasizing the impacts of Internet-enabled business conduct. A survey was conducted in Norwegian enterprises. Their research demonstrates that e-business value creation is associated with relevant e-business value drivers, namely efficiency, complementarities, customer retention, and innovation.

6. THE RESEARCH HYPOTHESES

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

H1: Efficiency is positively affecting the e-business value creation in the bank.
H2: Complementarities are positively affecting the e-business value creation in the bank.
H3: Lock-in is positively affecting the e-business value creation in the bank.
H4: Novelty is positively affecting the e-business value creation in the bank.

7. RESEARCH FINDINGS: TESTING THE THEORETICAL HYPOTHESES

7.1 Hypotheses H1-H4 Drivers of Value Creation vs. E-business Value

A multiple regression analysis is used to test hypotheses H1-H4. For each hypothesis, a model of regression was run separately for each of the independent variables (efficiency, complementarities, lock-in and novelty).

7.2 Testing the Underlying Assumptions for Multiple Regression

7.2.1 Linearity and Homoscedaticity

Figure 3 shows that the points are randomly and evenly dispersed throughout the scatter plot. This pattern is an indication of a situation in which the assumption of linearity and Homoscedaticity has been met (Hair et al, 1998).

**FIGURE 3:** Scatter plot: Drivers of Value Creation vs. E-business Value
7.2.2 Normality

Figure 4 shows that the data are normally distributed throughout the histogram. This pattern is an indication of a situation in which the assumption of normality has been met. The sample size is large enough (140) to assume reasonably normality in the scales (StatSoft, Inc 2003).

**FIGURE 4:** Histogram: Drivers of Value Creation vs. E-business Value

7.2.3 Multicollinearity

Table 1 shows the values of tolerance and VIF, both are in the acceptable range. All the tolerance values are greater than 0.1, and all VIF values are less than 10.

**TABLE 1:** Collinearity Statistics: Drivers of Value Creation vs. e-business Value

*VIF: Variance Inflation Factor

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Collinearity Statistics</th>
<th>Tolerance</th>
<th>VIF*</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Drivers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Efficiency</td>
<td></td>
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<tr>
<td>Complementarities</td>
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<td>0.527</td>
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<td>Lock-in</td>
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<td>0.595</td>
<td>1.680</td>
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<tr>
<td>Novelty</td>
<td></td>
<td>0.499</td>
<td>2.006</td>
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</tbody>
</table>

7.2.4 Independence of Residuals and Outlier Analysis

The Durbin-Watson value is 2.061. Therefore, the independence of residuals assumption does not violate, because the value is very close to 2. The Cook's Distance and Centered Leverage values are in the acceptable range. Therefore, the outliers have no influence on the regression model.
7.3 Results of the Multiple Regressions

Table 2 summarizes the results of multiple linear regressions for hypotheses 1-4. The table shows the standardized regression coefficient of each predictor, $R^2$ 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).

Table 2 shows the dependent variable as e-business value. All of the drivers efficiency, complementarities, lock-in and novelty affect positively and significantly the e-business value ($p<0.01$). Further, all the drivers explain 73.2% of the variance of e-business value. Specifically, efficiency driver explains 25.9% of the variance of e-business value; complementarities driver explain 12.7% of the variance of e-business value; lock-in driver explains 14.2% of the variance of e-business value; novelty driver explains 49.1% of the variance of e-business value.

Furthermore, all of the drivers efficiency, complementarities, lock-in and novelty explain 71.3% of the variance of sales-services-marketing as a dimension of e-business value, 55.5% of the variance of internal operations as a dimension of e-business value, and 47% of the variance of coordination and communication as a dimension of e-business value.

The Standardized coefficient (beta) values for ‘Efficiency’ is positive and significant ($p<0.01$), and thus supports hypothesis 1. The Standardized coefficient (beta) values for ‘Complementarities’ is positive and significant ($p<0.05$), and thus supports hypothesis 2. The Standardized coefficient (beta) values for ‘Lock-in’ is positive and significant ($p<0.05$), and thus supports hypothesis 3. The Standardized coefficient (beta) values for ‘Novelty’ is positive and significant ($p<0.01$), and thus supports hypothesis 4.

On the other hand, the efficiency driver contributes significantly to e-business value as coordination & communication, sales-services-marketing and internal operations (0.240, 0.226, 0.206) respectively, but the complementarities driver contributes significantly to e-business value as internal operations (0.337), while the lock-in driver don’t contribute significantly to e-business value in any dimension. But the novelty driver contributes significantly to e-business value as sales-services-marketing, coordination & communication and internal operations (0.664, 0.367, 0.246) respectively.

| TABLE 2: Results of Multiple Regression Analysis for Drivers of Value Creation vs. e-business Value |
|---|---|---|
| **Independent** | **Dependent (Sum e-business value)** | **e-business Value Dimensions (Dependent)** |
| **Drivers** | e-business value $R^2=0.732$ $F=92.125^{**}$ Durbin-Watson $=2.061$ | Sales/services/marketing $R^2=0.713$ $F=83.769^{**}$ Internal operations $R^2=0.555$ $F=42.094^{**}$ Coordination and communication $R^2=0.470$ $F=29.943^{**}$ |
| Efficiency (H1) | $\beta=0.259$ $t=4.437^{**}$ | $\beta=0.226$ $t=3.744^{**}$ | $\beta=0.206$ $t=2.745^{**}$ | $\beta=0.240$ $t=2.930^{**}$ |
7.4 Results of the Hypotheses Test

The four research hypotheses propose the relationship between the four drivers of e-business value and e-business value creation.

H10: Efficiency driver does not affect positively e-business value.
H1: Efficiency driver affects positively e-business value.

H20: Complementarities driver does not affect positively e-business value.
H2: Complementarities driver affects positively e-business value.

H30: Lock-in driver does not affect positively e-business value.
H3: Lock-in driver affects positively e-business value.

H40: Novelty driver does not affect positively e-business value.
H4: Novelty driver affects positively e-business value.

Table 2 lists the multiple regression coefficient (B), t-statistics and the significance of t-statistics in the regression analysis. The multiple regression coefficient and t-statistics of the four drivers were calculated to estimate the individual contribution of these drivers to the regression model for e-business value. Table 2 shows these coefficients of the four drivers efficiency, complementarities, lock-in and novelty are significantly affect e-business value.

On the other hand, Table 2 shows that the novelty driver contributes significantly and positively to e-business value as sales-services-marketing, internal operations and coordination & communication (0.664, 0.246, 0.367) more than efficiency driver (0.226, 0.206, 0.240), respectively, however, the complementarities driver contributes significantly to e-business value only as internal operations (0.337). While the lock-in driver do not reveal significant effect on e-business value in any dimension. The null hypotheses H9o, H10o, H11o and H12o are rejected, while the alternative hypotheses H9, H10, H11 and H12 are supported by the current study. It is concluded that the all drivers efficiency, complementarities, lock-in and novelty have a significantly positive effect on e-business value.

8. CONCLUSIONS AND FUTURE WORKS

Our study has been preoccupied with the value impacts of e-business conduct. Our research problem was that e-business value is created if and only if banks adopt business models that respond to relevant e-business value drivers efficiency, complementarities, lock-in, and novelty. Hence, the four potential drivers of value creation are present through carrying out e-business in Jordanian banks (i.e., e-banking). In our analysis each of the identified drivers of value creation commands different attention.

Our study reveals a relatively strong relationship between the creation of e-business value and e-business conduct in banks. Also, our value drivers represent key aspects of e-business conduct. Consistent with the findings of Amit and Zott (2001), value creation through e-business in banks (i.e. e-banking) can be achieved only by continuously developing and improving business activities associated with these particular value drivers. Success in this respect requires some thorough rethinking on part of responsible managers. In particular, it should be recognized that e-business conduct is not like regular business conduct. Among other things, key value drivers are different.

The research findings regarding this problem show that the hypotheses 1, 2, 3, 4 are fully vindicated through the significance of four drivers: Efficiency, which is related to perform a particular economic interchange at a lower cost. Complementarities, which are related to a
situation, when customers value your product more when they have other products/services, than when they have your product alone. Lock-in is related to the extent to which customers are motivated to engage in repeat transactions. Novelty is related to innovation in products, services, production, distribution or marketing, the markets served, and structuring of transactions.

Efficiency driver contributes significantly to creation of e-business value; it explains 25.9% of change in the e-business value. More specifically, the efficiency driver contributes significantly to e-business value as sales-services-marketing, coordination & communication and internal operations (0.226, 0.240, 0.206) respectively. This means that the higher economic interchanges at a lower cost in the bank, the more value will be accrued due to carrying out e-business in banks (i.e., e-banking). In this sense, the efficiency will entice banks to adoption and applying e-business to decrease the overall costs of the bank.

Complementarities driver contributes significantly to creation of e-business value, 12.7% of change in the e-business value is attributed to the complementarities driver. More specifically, the complementarities driver contributes significantly to e-business value only as internal operations (0.337). This means that the more a situation when customers value a product/service more when they have other products/services than when they have a product/service alone, the more value will be accrued due to carrying out e-business in banks (i.e., e-banking). Meanwhile, the lock-in driver does not make any significant changes or improvements to the sales-services-marketing, coordination & communication and internal operations in the bank.

Novelty driver contributes significantly to creation of e-business value, 49.1% of change in the e-business value is attributed to the novelty driver. More specifically, the novelty driver contributes significantly to e-business value as sales-services-marketing, coordination & communication and internal operations (0.664, 0.367, 0.246) respectively. This means that the higher innovation in products, services, new methods of production, distribution or marketing, markets served, and structuring of transactions in the bank, the more value will be accrued due to carrying out e-business in banks (i.e., e-banking). In this sense, the novelty will be conclusive impetus for adoption and applying e-business in the bank (i.e., e-banking).

In that respect, as shown in table (6.10), the novelty is the strongest driver for e-business value creation (0.491) than the other drivers efficiency, lock-in and complementarities (0.259, 142, 0.127) respectively.

Consistent with the findings of Amit and Zott (2001), value creation through e-business can be achieved only by continuously developing and improving business activities associated with these particular value drivers. As regards our study, all of the four drivers efficiency, complementarities, lock-in and novelty have found to be a critical factors for e-business value creation in the banks.

The main purpose of this research is to provide a context for better understanding of e-business value and how the drivers 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 drivers 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 drivers, 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 drivers 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).

REFERENCES