B2B e-Commerce Adoption by the Grocery Industry in Developing Countries: Indonesia versus Bahrain

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Abstract
Developing countries have lagged behind developed countries in the adoption of B2B e-Commerce (EC). There have been limited in-depth studies to explore the adoption experience of developing countries. This study compares the experience of the grocery industry in adopting B2B e-Commerce (EC) in Indonesia and Bahrain as examples of developing countries. It shows that the differences in the social, economic, political and technological conditions of developing countries do not necessarily create barriers to the adoption. Each industry in a specific country may have a unique position that requires a thorough assessment of the relevance of B2B EC and the appropriate strategies for adoption. This study offers contribution to both theory and practice through detailed investigation of the adoption experience of the grocery industry in both countries.

1. Introduction
Organizations adopt Business-to-Business (B2B) e-Commerce (EC) technologies such as automatic identification, Electronic Data Interchange (EDI) and Vendor Managed Inventory (VMI) to better manage their supply chains. These B2B EC technologies are also referred to as Inter-organizational Systems (IOS) since their scope transcends organizational boundaries [1-2]. Many organizations across industries in developed countries have been actively engaged in B2B EC practices and enjoyed enormous benefits including enhanced accuracy, improved visibility across the supply chain through information sharing, improved efficiency, reduced stock outs, reduced unnecessary inventory, improved trading partner relationship, improved flexibility and responsiveness, improved internal coordination and expanded market access [1, 3-5].

Although there has been a significant growth of B2B EC adoption rate across the globe generally, organizations in developing countries have lagged behind in B2B EC adoption [6]. Developing countries face a different set of problems and concerns that are completely different from those faced by developed countries and, therefore, need different set of approaches to technology adoption [7]. For example, Hofstede’s national culture theory shows that developing countries and developed countries differ greatly on their characteristics, which also affect their attitude towards technology adoption [8-9]. In addition, most B2B EC initiatives were developed in Western countries that have very different national environmental backgrounds, such as legislation, technology infrastructure, competition, financial resources, labor rates and regional ways of doing business, to those of developing countries and, therefore, their adoption by developing countries can be extremely difficult [10]. This creates barriers to achieving advanced supply chain management for developed countries that trade with developing countries, since B2B EC is an inter-organizational system and, thus, cannot be adopted in isolation from other trading partners [11-12].

At this stage, there are still limited in-depth studies and understanding regarding the adoption of IOS in developing countries, although a growing number of technology penetrations in these countries in the last decades [6, 13]. Specifically, there are some noticeable gaps in the existing studies that have been identified. Firstly, most studies concentrate on exploring the diffusion of IOS among Small Medium Enterprises (SMEs) in developing countries as opposed to large organizations, which are mostly conducted using quantitative methods to explore factors affecting adoption [14-15]. In addition, most of these studies, especially in the South East Asia region, explore Business-to-Customers (B2C) EC practice and only a handful number of studies assess Business-to-Business (B2B) EC initiatives [8, 16]. Moreover, the existing studies generally lack depth in their exploration of the adoption within a country by aggregating various industries’ experiences [7, 17]. Only limited studies focus on a specific industry [18-19], but their studies offer partial insights into the adoption experience of the industry since dynamic interactions between trading partners in the course of adoption were not explored in detail.

To address the current gaps, this study aims to explore in detail the adoption of B2B EC in two developing countries with different social, economic, cultural, political, legal and technological conditions and compare their adoption experiences. We chose Indonesia and Bahrain as the contexts of our study because they represent two different parts of the world. Thus, by comparing the experiences of the two countries, we could obtain a broader view of B2B EC adoption in developing countries. The grocery industry was selected since the industry has been pioneering in the adoption of technologies due to the characteristics of the industry that involves high volume transactions with a small profit
The main research question of this study is: “what are differences and similarities in the adoption of B2B EC by the grocery industry in Indonesia and Bahrain”? Guided by the process model of IOS adoption [21] that advocates the ‘emergent’ perspective of causal agency and the use of a larger unit of analysis beyond organization level to explore the dynamic interactions between trading partners in the course of adoption, we focus on the grocery industry within each country as the unit of analysis.

2. The Research Framework

Based on the taxonomy of Markus and Robey [22], IOS studies can be classified according to the factor approach and process approach [21]. The factors based studies (see the model of the left of Figure 1) assume that IOS adoption is determined by a number of predicting variables identified at a particular point of time. These studies examine (a) the nature of technology [23-26], (b) characteristics of the organization [27-28] and (c) some conditions in the environment of the adopting organization [24, 29-31] in order to predict adoption.

The factor based studies adopt a firm-centric perspective, which suggests that organizations do not have a strong influence over their environment and these studies do not account adequately for the fact that the action of firms changes their conditions over time [32]. On the other hand, the process approach suggests that an organization’s implementation decision is an ongoing process of assessment and re-assessment of adoption aspects (Figure 1, the model on the right side). The model posits that although the nature of the technology, the capability of the organization and the external environment affect the focal organization’s decision to adopt (or not) an IOS, through the interactions between the focal organization and its trading partners and other parties within the industry overtime, it may change its perception towards the technology and capability which may in turn influence the decision outcome. This approach provides a better understanding of the way organizations adopt an IOS by investigating their industry structure, capturing the changes of technology and the role of organization in the adoption process [32-33]. Therefore, in this study, we investigate the adoption of B2B EC in the Bahraini and Indonesian grocery industry using the IOS adoption process model as a framework.

Figure 1: Factor-based approach and Process-based approach

3. Research Method

Case study was chosen as a method because of its ability to study a phenomenon of interest in its natural context, which is appropriate for the process-based approach to studying B2B EC adoption. To enhance the generalizability of the findings, a multiple case study was employed as it enabled us to collect rich information from various organizations and supply chains in the Indonesian and Bahrain grocery industry regarding the business procedures, their interactions with trading partners within the supply chain and the use of IOS to manage the supply chain activities.

The unit of analysis is the grocery industry. As shown in Table 1, there are 13 organizations involved in this study. Eight organizations (Companies A to H) are from the Indonesian grocery industry and five organizations (companies I to M) are from the Bahraini grocery industry. These companies are the main players within their specific sector (manufacturer, distributor or retailer) and have strong influences in the adoption and use of technological innovations within the industry. All participating manufacturers and retailers are large organizations with over 200 employees, while distributors are typical medium-sized organizations that have their presence across the country. In addition, there are trading relationships between at least two participating organizations to enable us explore the dynamic interactions that occur during the course of adoption. Therefore, the adoption experience of the participating organizations can reflect the overall industry experience with the adoption of B2B EC.

The data collection technique used is semi-structured interviews. Each interview lasted approximately from 2 to 4 hours. Most interviewees were interviewed two times for further information or clarification. After each interview, data were analyzed using Nvivo software and related concepts were identified. The next participants were then chosen based on the emerging concepts identified in the previous cases, but the selection was also based on the availability and willingness of the participants. In the last two interviews, the researchers did not obtain much new information. When this theoretical saturation was achieved, the data collection was therefore terminated. Semi structured interviews...
were conducted with the manager(s) of each of the
companies who has knowledge of the working
relationship with other trading partners and the IT
adoption aspect.

Table 1: Overview of the companies and interviewees

<table>
<thead>
<tr>
<th>Country</th>
<th>Company</th>
<th>Type</th>
<th>Ownership</th>
<th>Interviewee(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>A</td>
<td>Manufacturer</td>
<td>Foreign</td>
<td>Unit Account Manager</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Manufacturer</td>
<td>Foreign</td>
<td>Business Logistics Manager</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Manufacturer</td>
<td>Local</td>
<td>Managing Director, Head of IT, Operation &amp; Marketing Manager</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Distributor</td>
<td>Local</td>
<td>Business Manager, Director</td>
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<tr>
<td></td>
<td>E</td>
<td>Distributor</td>
<td>Local</td>
<td>Managing director</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Distributor</td>
<td>Local</td>
<td>Owner</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Retailer</td>
<td>Foreign</td>
<td>IT Director</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>Retailer</td>
<td>Local</td>
<td>VP Logistic, Head of IT, Operational Manager</td>
</tr>
<tr>
<td>Bahrain</td>
<td>I</td>
<td>Retailer &amp; Distributor</td>
<td>Foreign</td>
<td>Customer Service Manager</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>Retailer &amp; Distributor</td>
<td>Local</td>
<td>Chief Information Officer</td>
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<tr>
<td></td>
<td>K</td>
<td>Retailer &amp; Distributor</td>
<td>Local</td>
<td>IT Manager</td>
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<td></td>
<td>L</td>
<td>Manufacturer</td>
<td>Local</td>
<td>Logistics Manager</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>Manufacturer</td>
<td>Local</td>
<td>Distribution and Marketing Manager, IT Manager</td>
</tr>
</tbody>
</table>

4. The Case Studies

In this section, we provide a brief overview of the B2B EC technologies (initiatives) that have been adopted by the grocery industry in Indonesia and Bahrain.

Our study reveals that the Indonesian and Bahraini grocery industries have different B2B EC adoption experiences. As shown in Table 2, overall, the Indonesian has experienced more advanced use of technologies compared to the Bahraini grocery industry. These technologies are explained below.

4.1. Barcodes

The case studies indicate that there are different levels of Barcode use in the two industries. The Indonesian grocery industry is more advanced than the Bahraini Grocery industry. All the participating companies in the Indonesian grocery industry use barcodes and the associated standardized product numbering system based on the international global standard (GS1). These companies use the same barcodes throughout their respective supply chains, i.e., from the factories of the manufacturers up to the stores of the retailers. However, small suppliers are generally not barcode compliant and therefore the participating retailers (companies G and H) need to print barcodes for their products based on their own proprietary standard. Nevertheless, the volume of such products is significantly lower than the volume of products that are supplied by barcode capable suppliers including all the participating manufacturers (Companies A, B, and C).

In the Bahraini grocery industry many of the retailers (Companies I, J, and K) are also distributors of products, so the barcodes are created at the distribution level. However, when retailers buy other products from other distributors, in many cases these barcodes are re-created at the retailers’ outlets, as revealed in the interviews with participants from Companies I, J, and K. Thus, the industry has not adopted the international product numbering system, which has been widely used across the globe since 1980s. Surprisingly, Company M, which is one of the largest telecommunication companies in Bahrain, does not use any barcodes in the distribution of their prepaid vouchers and cards. There seems to be no requirement to track vouchers and cards that have been distributed.

4.2. Electronic Data Interchange

EDI has been adopted by all companies in the Indonesian grocery industry, whereas this technology has not been implemented by the Bahraini grocery industry. The grocery companies in Bahrain are still using fax, phone calls and email to send or receive orders. However, it must be noted that Companies J and K are EDI capable when dealing with overseas trading partners but not with any companies locally.

The Indonesian grocery industry has implemented EDI using different standards of structuring data in various different ways including web portal (Companies C, E, and G), XML EDI (Companies A, B, and G), text file EDI (Companies B and H) and PDA-based EDI (Companies A, C, D, and F). The PDA-based EDI is useful to capture demand information from small retailers by the distributors representing specific manufacturers.

4.3. Electronic Voucher Distribution

EVD is only being adopted in Bahrain, since the Indonesian grocery industry does not deal with phone
cards and vouchers. Company M has introduced EVD in the Bahraini Market in 2006. The purpose of EVD is to remove the need for paper-based phone cards and vouchers. The retailers require installing an EVD machine in their outlets. The machine has a link to a server where different customers make their purchases. Currently, Company J is using EVDs of Company M in their outlets.

Table 2: B2B EC technologies used by the grocery companies in Indonesia and Bahrain

<table>
<thead>
<tr>
<th>Case</th>
<th>Company</th>
<th>B2B EC Technologies</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Barcodes</td>
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<tr>
<td>Case 1 (Indonesia)</td>
<td>A</td>
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<td></td>
<td>B</td>
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<td></td>
<td>C</td>
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<td>D</td>
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<td>E</td>
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<td>F</td>
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<td>G</td>
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<td></td>
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<tr>
<td></td>
<td>I</td>
<td>✓</td>
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<tr>
<td>Case 2 (Bahrain)</td>
<td>J</td>
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<td>K</td>
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<td>M</td>
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</table>

4.4 Vendor Managed Inventory

VMI initiative has been adopted by some of the companies in the Indonesian grocery industry. For example, Company H (retailer) shares its inventory and point of sale data with the Company B (manufacturer), so that the manufacturer can place purchase orders on behalf of the retailer. Moreover, Companies A, C, D and F also share point of sale and inventory level data so that the distributors (Companies F and D) can recommend order quantities for the retailers. This initiative has been enabled by the EDI capability of the participating organizations.

Within the Bahraini grocery industry, none of the companies have adopted VMI, because required technology (EDI) has not been adopted to facilitate efficient data sharing between manufacturers and retailers. Only company K has a VMI initiative with one of their overseas trading partners. They share point of sale data using a web portal on a daily basis. Using this information, the supplier creates a reverse purchase order for the retailer.

4.5. Collaborative Planning Forecasting and Replenishment (CPFR)

This initiative is the least adopted system in both countries. The main reason behind this is because CPFR implementation requires very high levels of trust and alignment between the companies. It is quite a surprise to find out that Companies A and G from the Indonesian grocery industry have adopted this system. Through a Joint Business Plan, both organizations align all levels of activities including planning, forecasting, monitoring demand, and integrating other activities to achieve annual strategic objectives and mutual benefits. Company A’s collaboration with Company G is considered to be one of the best in the industry, and serves as a ‘model’ for other distributors and retailers. However, the participating organizations express their perception that CPFR will be unlikely to be adopted widely within the industry.

5. The Findings

Guided by the research framework, we discuss the differences in the adoption of B2B EC as experienced by the Indonesian and Bahrain grocery industries.

5.1. Nature of technology

5.1.1. Perceived benefits of B2b EC technologies

The data indicates that the participants from the companies in the Bahraini grocery industry do not perceive any value from technologies such as EDI, VMI and CPFR. They argue that because labor cost is relatively cheap, the do not see a value from B2B EC technologies. This is consistent with the relatively low education level related to the use of technologies, which is elaborated in the next section. With such a condition, it is difficult for organizations to justify the adoption of
technologies to replace human labor for the sake of efficiency.

“The wages of administrative workers are low compared to these workers in developed countries and implementing these sophisticated systems would be unjustified given the current market condition.” Distribution and Marketing Manager, Company M

In contrast, the participants of the companies in the Indonesian grocery industry argue that B2B EC technologies offer them many benefits such as improved work flow, reduction in redundant operation and reduced labor. While the labor is still cheap as in Bahrain, the interviewees from the industry still find some of these systems such as EDI as necessities to improve the overall performance.

“We need to do things more efficient and faster. Automation [EDI] reduces human errors, which results in efficiency and speed that leads to more sales. It increases our speed of processing data. Also it helps to control and impose disciplines on our salesmen. We can track down all their activities in the field.” Managing Director, Company C

5.1.2. Cost of Technology

Cost of technology does not seem to impede the adoption of B2B EC initiatives in both Indonesian and Bahrain. Only those small industry players struggle with the cost of technologies. For the case of the Indonesian grocery industry, for example, the participating retailers (Companies G and H) contend that smaller suppliers are very reluctant to be barcode capable when they find out that there are service fees and other necessary investment costs involved. On the other hand, large organizations with a positive perception of the B2B EC technologies are willing to invest in relevant technologies to improve supply chain coordination. Both manufacturers (Companies A and C) equip the distributors (companies D and F) with the required infrastructures (PDAs and the software) to facilitate EDI. For the Bahraini grocery industry, most of the participating organizations can afford the technologies, but they are reluctant to do so for other social, cultural and political reasons.

5.2. Capabilities of organization

5.2.1. Education

The case study analysis suggests that generally there is a lack of understanding of the B2B EC. For example, the managers interviewed from Companies I, L and M were not sure what EDI is and its potential as well as other related technologies and initiatives to enable electronic trading between parties within the supply chain. They do not know about the EDI standards such as EDIFACT and AS2 based standards. However, Companies J and K that have got EDI capability and trade electronically with their overseas trading partners, demonstrate a reasonable understanding of B2B EC.

In Indonesia, there is a relatively higher level of understanding of the benefits and use of B2B EC compared to Bahrain. This could be caused by the fact that most of the participating organizations have senior managers with experience working in other countries including the USA, UK and Australia and hence are familiar with B2B EC initiatives. Through them, the technologies have been introduced within the industry. This learning spillover effect is missing in Bahrain.

5.2.2. Availability of resources

In Bahrain, the participating companies are leaders in the industry. They have the financial and technological capabilities to modify the industry by adopting these technologies in Bahrain. This is apparent when companies B and C, built the capabilities to send EDI data to their overseas trading partners. However, with their internal supply chains, they maintain the traditional way of conducting business transactions.

In Indonesia, the participating manufacturers and retailers are also leaders in the industry and they have invested significant amount of resources to improve the supply chain management within the industry through B2B EC initiatives.

5.2.3. Top management support

In the Indonesian grocery industry, the powerful and influential parties (Companies A, B, C, G and H) have complete support from the top level management to adopt most B2B technologies. Among the Distributors (Companies D, E and F), top management also support the use of B2B EC technologies. However, there is limited top management support for CPFR because of its complexity.

In the Bahraini grocery industry, the top management of the large companies such as Companies J and K support the implementation of EDI and VMI systems with overseas trading partners but not with local trading partners because of the industry characteristics, as discussed in Section 3.1. However, the top management of Companies K and M provide full support for EVD implementation.

5.3. Industry structure

5.3.1. Supply chain structure

The current industry structure in Bahrain does not facilitate the adoption of B2B EC technologies. Companies A, B and C are large retailers that also distribute both local and imported items. Company D is a vendor of personal and cleaning products and it receives all their items from their factories in Saudi Arabia. They use their office in Bahrain to distribute products to stores in Bahrain. Since the retailers are also distributors of competing products, they are unlikely to adopt any B2B EC technologies with other distributors/retailers in the industry.

The structure of the Indonesian grocery industry is more structured than that of Bahrain. The manufacturers, distributors and retailers have distinct roles, making it easier to adopt these technologies. There is less competitive tension between the members in the supply chain. This is one of the main reasons for the industry
being advanced in the adoption of various B2B EC initiatives.

5.3.2. Foreign influence in the adoption of IOS in the local industry

The Bahraini grocery industry has not been influenced by the presence of foreign retailers in the country. For example, Company I is one of the subsidiaries of the largest grocery retailers in Europe and they still have opted not to implement any B2B EC technologies or influence their trading partners to use them in Bahrain. In addition, while some companies such as Company J and K use EDI with overseas trading partners, they do not influence their local supply chains to make use of the technology.

In contrast, the existence of Multi-National Companies (MNC) such as Companies A, B and G in Indonesia has had positive influence on the grocery industry. These companies have followed their overseas best practices and have been playing a leading role in the industry to adopt these technologies.

“Foreign companies surely influence technology adoption in the local industry as well. They are the trend-setters when it comes to new technology initiatives. For example, VMI was initiated and directed in the beginning by our Australian manager who already had 30 years of experience in supply chain and logistics.” Vice President Logistics, Company H

5.3.3. Pressure from trading partners

In Bahrain, large companies are not interested in implementing any B2B technologies with any of their local trading partners. For example, Company J (with EDI capability) does not pressurize their trading partners to adopt these systems. Their sales are mostly from other Gulf Council Countries (GCC) and their internal systems are completely integrated. They do not see a need to collaborate or integrate with any of the local manufacturers or distributors and therefore are not pressurizing the local players to be EDI capable.

On the other hand, our study indicates that organizations in the Indonesian grocery industry often pressure their unwilling trading partners to take part in the technology adoption. For example Company G as a large retailer is in the position to force its distributors (Company E) to use its B2B web portal due to its higher bargaining power. Meanwhile, in the case of the handheld PDA-based EDI system, the coerced party consists of smaller distributors (Companies D and F). Incompliance to this requirement could lead to the termination of contract for these distributors by the larger manufacturers. However, the large companies are willing to offer on-going support to these coerced trading partners to ensure the right use of the system and to maintain good trading relationships.

5.3.4. Trust between trading partners

To implement B2B EC technologies such as EDI, VMI and CPFR, trading partners are required to understand each other’s processes and internal systems. Sharing of this information requires trust because there is a possibility that this information can be misused for the benefits of the other parties. From the case analysis, it can be inferred that in the Bahraini, there is a lack of trust in the grocery industry. The retailers have minimal communication with other companies.

“No, we are not open to each other. I think trust is a major issue in Bahrain” Chief Information Officer, Company J

Contrary, there appears to be a high level of trust in the Indonesian grocery industry, which has enabled the progression from EDI to other B2B EC initiatives such as VMIs and CPFR. The Retailer (Company G) has successfully convinced all of its suppliers (Company C, B and E), because of their good relationship and trust, to collaborate and participate in the implementation of EDI systems (web portal and XML-based). Company H has given the ordering authority to Company B to perform replenishment duties, which requires a lot of trust. Similarly, Companies A and C have given the representatives of their distributors (Companies F and D) the responsibility to manage their inventory. More specifically, based on the POS and inventory data, the representatives from both companies decide the final orders.

“The very basic of VMI is trust with our partners. It is the foundation for all. Basically without trust, all things would be impossible.” Vice President Logistics, Retailer, Company H

Companies A and G have initiated a CPFR project which requires a long-term commitment and trust between the trading partners. This is because this type of systems requires full transparency in terms of pricing information and future plans.

5.3.5. Relationships between trading partners

In the Bahraini grocery industry, the retailers and suppliers do not share an intimate relationship, except with Company M. Company M is a telecommunication company, which provides calling card to some of the retailers. This company is in good terms with most of the retailers, particularly company J and therefore, were able to implement the EVD System. However, the rest of participating companies have an arms-length relationship.

With every supplier the same relationship is there. No critical relationship, every supplier is the same, big or small. Customer Service Manager, Company A

Our study indicates that in the Indonesian grocery industry, there are different types of relationship that have led organizations to the adoption of various technologies with different sophistication levels. The adoption of basic initiatives such as barcode and EDI by Companies B and H and Companies A and G improves their ability to collaborate through information sharing, aligns business goals and increases their dependence, which in turn enables trading partners to adopt more advanced initiatives such as VMI and CPFR.
5.4. External Factors

5.4.1. Government influence

In both Indonesia and Bahrain, the government does not seem to provide much support, incentives and policies to facilitate B2B EC adoption. The participating organizations from the Indonesian grocery industry assert that some of the government regulations may actually impede the full adoption of B2B EC initiatives to complete a trading transaction. The need for paper-based invoices for taxation purpose, for example, hinders organizations from gaining the full benefits of having electronic invoices and from the adoption of more advanced initiatives such as Evaluated Receipt Settlement that eliminates the need for invoices.

Likewise, the anti-trust regulation does not permit different organizations to integrate their IT application systems within the supply chain. Therefore, there have been various ways that organizations within the industry have implemented to achieve the required information sharing capability between trading partners. There are also still unclear laws and regulations regarding software piracy and other violations to electronic intellectual property, which have caused organizations to be reluctant to adopt Electronic Fund Transfers (EFT) or other forms of electronic payment in general.

5.4.2. Industry body influence

In Bahrain, there is no active industry body that handles the creation of EDI standards or a third party (such as Internet Value Added Network) to facilitate EDI transactions. All transactions between companies are manual to a great extent. Some companies face problems with inconsistent product information and products codes within their organization. For example, Company K has different product information in Saudi Arabia and Bahrain because of their decentralized legacy systems. They are working in their internal systems at the moment and they expect to clean the data and have a single internal system in Saudi Arabia and Bahrain. Company I is having issues with some suppliers and usually creates its own bar codes for products. Since the information is being double handled, in some instances the same bar code is sometimes used for two different products such as a magazine and juice, which creates a lot of inefficiencies.

On the contrary, the Indonesian grocery industry uses the international GS1 standard to share product information for about 80% of the products in the market. The GS1 standard body in Indonesia appears to be more actively supporting the industry needs than the GS1 in Bahrain. In addition, there are some industry bodies and associations in Indonesia that play an important role to help organizations with creating standards and pursue various innovations.

5.4.3. Cultural compatibility

Since B2B EC technologies were developed in the context of developed countries, there have been some cultural related issues observed. For example, with the Indonesian case, we found that there was a certain degree of resistance among the salesmen when the PDA system was first introduced, as revealed below:

“Our culture is very different from Western culture. In our culture, people tend to sit within their comfort zone and do not want to change. People sometimes are afraid of new things and do not want to learn and adapt. They are sceptic that these new things are of bad influence and will harm them.” Head of IT, Company C

Secondly, the importance of face-to-face communication and personal networking are also strong characteristics of East Asian culture that are still ingrained in every aspects of conducting business. In Indonesia, it is still very important to frequently meet business partners face to face. This cultural aspect is reflected in the selection of B2B EC technologies by the participating organizations, especially in the use of PDA-based EDI system. This is also in line with the socio-economic condition of the country in which the labour cost is relatively low and therefore the cost of sending distributors to visit small retailers to maintain social contacts is not prohibitive.

In the Bahraini grocery, most of the staff are used to paper-based transactions. The idea of adopting shared systems between companies is not receptive with the managers of these companies. There is limited face-to-face communication between retailers and distributors as compared to the Indonesian grocery industry.

6. Discussion and Conclusion

In this study, we compared the B2B EC adoption in the grocery industry in two developing countries with significantly different social, cultural and political conditions. Guided by the process approach to studying IOS, we have obtained a number of novel and important observations in regard to how B2B EC initiatives are adopted in these two countries. The summaries of the findings are shown in Table 3.

Our study shows that the Indonesian and Bahraini grocery industry have very limited similarities in their B2B EC adoption experience. Both cases actually have adequate financial and other resources to adopt B2B EC, but there is very little government intervention to encourage adoption. Myriads of differences have been identified from the perspectives of technology perception, organizational capability, industry / supply chain structure and external influences, as summarized in Table 3. Overall, the Indonesian grocery industry is far ahead than the Bahraini grocery industry in the adoption of B2B EC. In terms technological perception and organizational capability, there are significant differences between the two cases in terms of the perceived benefits, their understanding of technologies and the level of support from top level management that well explain the current status of adoption.

In particular, the industry structure has a significant effect on adoption experiences. The duplication of roles in the Bahrain grocery industry which leads to intense competition has hindered adoption as it is very difficult
for trading partners within the same supply chain to establish cooperative and trustful relationships, which are necessary for B2B EC adoption [35].

EVD can be successfully adopted within the industry, because there is no direct competition in this product category within the industry. Because of such complex industry structure, it has been very difficult to infuse the use of EDI within the industry, although some key players have got the capability that is only used with overseas trading partners. On the other hand, the structure of the Indonesian grocery industry is favorable and there are opportunities for organizations to establish good relationships with their key trading partners. This desirable industry structure also allows foreign influence in utilizing technologies to permeate within the supply chains and industry. Although coercion exists in pushing the agenda of large organizations in the adoption of B2B EC, plenty of supports have been provided to help less capable organizations.

<table>
<thead>
<tr>
<th>Factor group</th>
<th>Themes</th>
<th>Indonesian Grocery Industry</th>
<th>Bahraini Grocery Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nature of Technology</strong></td>
<td>Perceived benefits of B2B EC</td>
<td>Most companies find B2B EC useful</td>
<td>Most companies don’t find these systems appealing and argue that the ROI does not justify the investment.</td>
</tr>
<tr>
<td>Cost of technology</td>
<td>Generally, not a major issue</td>
<td>Generally, not a major issue</td>
<td></td>
</tr>
<tr>
<td><strong>Capabilities of organization</strong></td>
<td>Education</td>
<td>Medium level of understanding of the benefits of B2B EC leads to adoption.</td>
<td>Lack of understanding of B2B EC and related technologies</td>
</tr>
<tr>
<td>Availability of resources</td>
<td>Adequate to initiate B2B EC adoption</td>
<td>Adequate, but not used to initiate B2B EC adoption</td>
<td></td>
</tr>
<tr>
<td>Top management support</td>
<td>There is adequate top management support for EDI implementations but minimal support for VMI and CPFR</td>
<td></td>
<td>Lack of top management for EDI, VMI and CPFR. There is support for EVD because these two companies are dealing with non-competitive products such as pre-paid phone vouchers.</td>
</tr>
<tr>
<td>Supply chain structure</td>
<td>Members of the supply chain have clear and distinct roles.</td>
<td>Overlapping roles which create competitive tension that hinders B2B EC adoption.</td>
<td></td>
</tr>
<tr>
<td>Foreign influence in the adoption of B2B EC in the local industry</td>
<td>Multi-national companies influence B2B EC adoption in Indonesia.</td>
<td>Even though, some companies use EDI and VMI with foreign trading partners, it has not influenced the adoption in the Bahraini industry</td>
<td></td>
</tr>
<tr>
<td>Pressure from trading partners</td>
<td>Large organizations are influential in the industry. They coerce their small trading partners to adopt B2B EC, but also provide supports.</td>
<td>Large companies are not interested in implementing any B2B solutions within their local supply chains. Because of the overlapping roles, it is hard to coerce trading partners.</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>Adequate trust level exists.</td>
<td>Low level of trust due to competitive tension.</td>
<td></td>
</tr>
<tr>
<td>Relationships between trading partners</td>
<td>Relatively more mature relationships exists especially between a few large organizations</td>
<td>No intimate relationship among trading partners. All trading partners are treated equally.</td>
<td></td>
</tr>
<tr>
<td><strong>Industry structure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government guidance</td>
<td>Government does not play a major role.</td>
<td>Government role is absent</td>
<td></td>
</tr>
<tr>
<td>Support from industry bodies</td>
<td>Some supports to establish standards and assist in education are available from various bodies.</td>
<td>Generally, no or very little support from the industry bodies.</td>
<td></td>
</tr>
<tr>
<td>Culture compatibility</td>
<td>Cultural differences are addressed by the appropriate technologies.</td>
<td>Cultural differences hinder B2B EC adoption.</td>
<td></td>
</tr>
</tbody>
</table>
Other forces from the external environment have also affected the adoption experience of both cases differently. The different effects are greatly influenced by the industry structure. For example, although for both countries the cost of labor is low and it is still important to maintain social relationships through face-to-face contacts, the Indonesian grocery industry is able to adopt appropriate technologies that fit its local context through the use of PDA-based EDI. On the other hand, the Bahrain grocery industry does not seem to have the opportunity due to the unfavorable industry structure. Therefore for the case of Indonesia, there has been some successful progression in the adoption of B2B EC where a number of organizations have adopted more sophisticated initiatives such as VMI and CPFR based on the basic technologies such EDI and barcode. This confirms previous studies [34-35] that there has been a necessary trajectory in the adoption of B2B EC and there are reciprocal influences between trading partner relationship and their IOS sophistication.

In conclusion, by comparing the experience of the Indonesian and Bahrain grocery industries in adopting B2B EC, our study highlights an important fact that the differences in the social, economic, political and technological conditions of developing countries do not necessarily create barriers to the adoption. Each industry in a specific country may have a unique position that requires a thorough assessment of the relevance of B2B EC and the appropriate strategies for adoption. Such assessments would be valuable for organizations in developed countries that consider extending their supply chain to developing countries, so that they can envisage the possible challenges and desirable strategies in managing their supply chain activities.

This study offers valuable insights in the current practice of B2B EC initiatives in Indonesian and Bahrain. This is useful especially for most local players within the industry should they wish to keep up with the latest initiatives in order for them to stay competitive. It also provides explanation as to why B2B EC adoption may not always be easy to achieve. Finally, the study has also demonstrated the usefulness of adopting process approach to explore in detail the experiences of the industry with B2B EC adoption, which complements the existing studies in the area of IOS adoption by developing countries. Future studies employing the same approach to investigating the adoption of B2B EC in other developing countries would be useful to enrich the observations of this study.

7. References


