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EVALUATION THE RELATIONSHIP BETWEEN BUSINESS PROCESS REENGINEERING AND MARKET INFORMATION PROCESSING IN BANDAR IMAM PETROCHEMICAL COMPANY

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ABSTRACT

In this paper, we hypothesize that business process performance is an increasing function of (1) the firm's level of business process interaction and (2) the use of formal processes for collecting and utilizing market information. We also hypothesize that these linkages will be stronger among business process serving emerging markets. We test these hypotheses using data collected from business process located in the Bandar emam at mah shar. Our findings indicate that, regardless of market condition, formal processes for the collection of market information are positively related with the use of formal processes for market information utilization and this relationship is stronger among firms serving markets. In addition, business process performance is positively related with the use of formal processes for utilizing market information and this relationship is also stronger in markets. We also find that, in emerging markets, business process performance is a positive function of the use of formal processes for collecting market information. Contrary to expectations, we find that, regardless of market condition, the level of business process interaction has a negative relationship with the use of formal processes for market information utilization and no significant relationship with performance.

Keywords: business process, Market information, business process reengineering, Iran

INTRODUCTION

Business process design and business process reengineering (BPR) depend crucially on linking production procedures and organizational services to business goals and objectives. If BPR is carried out without understanding the way it is done, then the most likely outcome would be continuing less-than-satisfactory current practice and automating outdated processes. This kind of practice misses opportunities for innovation and rationalization. The analysis of business processes along with business strategies and organizational structures are essential to study the implications of BPR. BPR is an organizational initiative to fundamentally re-examine and redesign business processes with the objectives of achieving competitive break-through in quality, responsiveness, cost, satisfaction and other critical process performance measures. BPR focuses on the whole process starting from product conceptual stage to final product design. It provides the opportunity to reengineer the process or to reduce radically the number of activities it takes to carry out a process with the help of advanced Information Technology (IT), (Peppard and Rowland 1995). The marketing literature has long emphasized the strategic importance of market information regarding business process s and competitors. In this study we explore the impact on business process performance of two dimensions of a firm's market information processes. In particular, we distinguish between formal processes for collecting and using market information. On one hand, information cannot be used unless it is first collected, and formal processes for information collection can help ensure that collection efforts are both comprehensive and timely. On the other hand, the process of collecting information does not in and of itself ensure that the collected information will be used. Because collected information is often discounted or ignored by decision makers, formal processes for information utilization can increase the number of decision options considered, expand the set of information used to evaluate those options, and encourage managers to develop a more comprehensive

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understanding of the implications of that information. Francis and McIntosh (1997) identified causes for the emergence of BPR such as consumers, competition (global), technological development, and IT. Most companies are function- or department-oriented, and not process-oriented. Often, many people are involved in order fulfillment, but no one tracks a product and reports the status of an order directly. Reengineering makes one individual responsible for the complete business process (Self 1995). In another study, the success of BPR is related to the creativity of the people in the organization (Paper 1997). Some of the factors that will prevent reengineering and hence innovation and growth are: (i) correcting the process instead of changing it; (ii) loss of nerve; (iii) the barons; (iv) change of company champion; (v) settling for minor results; (vi) culture, attitudes and skill base; (vii) skimping on resources; and (viii) pulling back when people resist change. Our research is unique in several ways. First, unlike prior research on market information processes in small and medium-size firms (Keh et al., 2007), we focus explicitly on business process. As a result, our analysis yields important insights into the role within entrepreneurial start-ups of processes for collecting and using market information. Second, existing studies of market information processes have not distinguished between formal and informal market information processes. For example, Moorman's (1995) market information measurement scales ask respondents whether their divisions have "formal or informal processes" for collecting various kinds of market information, transmitting it internally, and then processing and acting on it. Third, recent research indicates that frequent interaction with business process s has a positive impact on business process performance (Joshi and Sharma, 2004; De Luca and Atuahene-Gima, 2007), which in turn should impact business process performance. In this paper we integrate this research stream with the market information process literature by empirically assessing whether business process interaction and the formal use of market information processes are distinct constructs that influence business process success. Fourth, several authors (Jaworski and Kohli, 1993; Kirca et al., 2005) have hypothesized that increases in market uncertainty increase the need for market information. In this paper we extend this reasoning by arguing that both business process interaction and formal market information processes have greater value for firms entering a market in which business process preferences are not well established but are still emerging.

3. Does market information improve business process performance?

Kohli and Jaworski (1990) in their study of market orientation identified three key market information processes: the generation of market information, the dissemination of that information throughout the firm, and the organization-wide responsiveness of the firm to that information. Moorman (1995) extended the Kohli–Jaworski framework by distinguishing between the conceptual and instrumental use of market information. In her empirical work, she found that both forms of information utilization directly influence business process performance. Similarly, Ottum and Moore (1997) found that business process success is most closely linked to information use. More recently, Keh et al. (2007) found that information use had a direct impact on the performance of small- and medium-sized firms, while information acquisition indirectly influenced performance through its impact on information utilization. Importantly, existing studies of market information processes have not distinguished between formal and information market information processes. For this reason, Moorman (1995) called for future research that explicitly addressed the performance impact of formal processes for market information acquisition and use. Castrogiovanni (1996) argued that formal planning processes stimulate learning, increase business process efficiency, and improve coordination. In addition, formal plans can help entrepreneurs clarify goals and objectives and improve their analysis of complex activities (Shane and Delmar, 2004). It seems reasonable to expect that the use of formal market information processes should yield similar benefits to start-up firms, but there is limited empirical evidence to support this expectation. In a meta-analysis of planning processes in small firms, Schwenk and Shrader (1993) found that formal strategic planning has a positive impact on firm performance. More recently, Coviello et al. (2000) reported that managers in small firms believed their firms would benefit from the use of formal planning processes. However, they did not examine the relationship between formal marketing processes and performance. While the market orientation literature has emphasized the processes a firm uses to collect market information, a related stream of research has focused specifically on processes designed to collect information about business process s (Campbell, 2003). Li and Calantone (1998) defined a firm's business process knowledge competence as processes designed to generate, structure, and organize intelligence about business process s. Their empirical work indicates that the level of business process knowledge has a positive effect

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on business process advantage. Similarly, Joshi and Sharma (2004) found a positive relationship between business process knowledge development and business process performance. More recently, De Luca and Atuahene-Gima (2007) found that product innovation is a positive function of business process knowledge breadth, depth, and specificity. These findings are consistent with findings in the entrepreneurship literature regarding the value of business process interaction. For example, Coviello et al. (2000) reported that, relative to large firms, small firms place relatively greater emphasis on direct relationships with specific business process s. Studies of organizational learning suggest that environmental factors can moderate the way in which market information processes influence firm performance (Hanvanich et al., 2006). For these reasons, the importance of a firm's market information processing capabilities should increase when market uncertainty increases. In the next section we use these insights to develop a contingency model of the information processes–performance relationship.

4. Conceptual framework

In this research we develop hypotheses linking a firm's market information processes to firm performance. Fig. 1 summarizes our theoretical model. We hypothesize that (1) business process interaction processes and formal processes for market information collection influence the formal processes for market information utilization and (2) all three processes influence business process performance. We further hypothesize that each of these relationships will be greater in markets with high uncertainty. Therefore, first we develop our hypotheses for business process established markets and then extend these hypotheses to business process emerging markets.

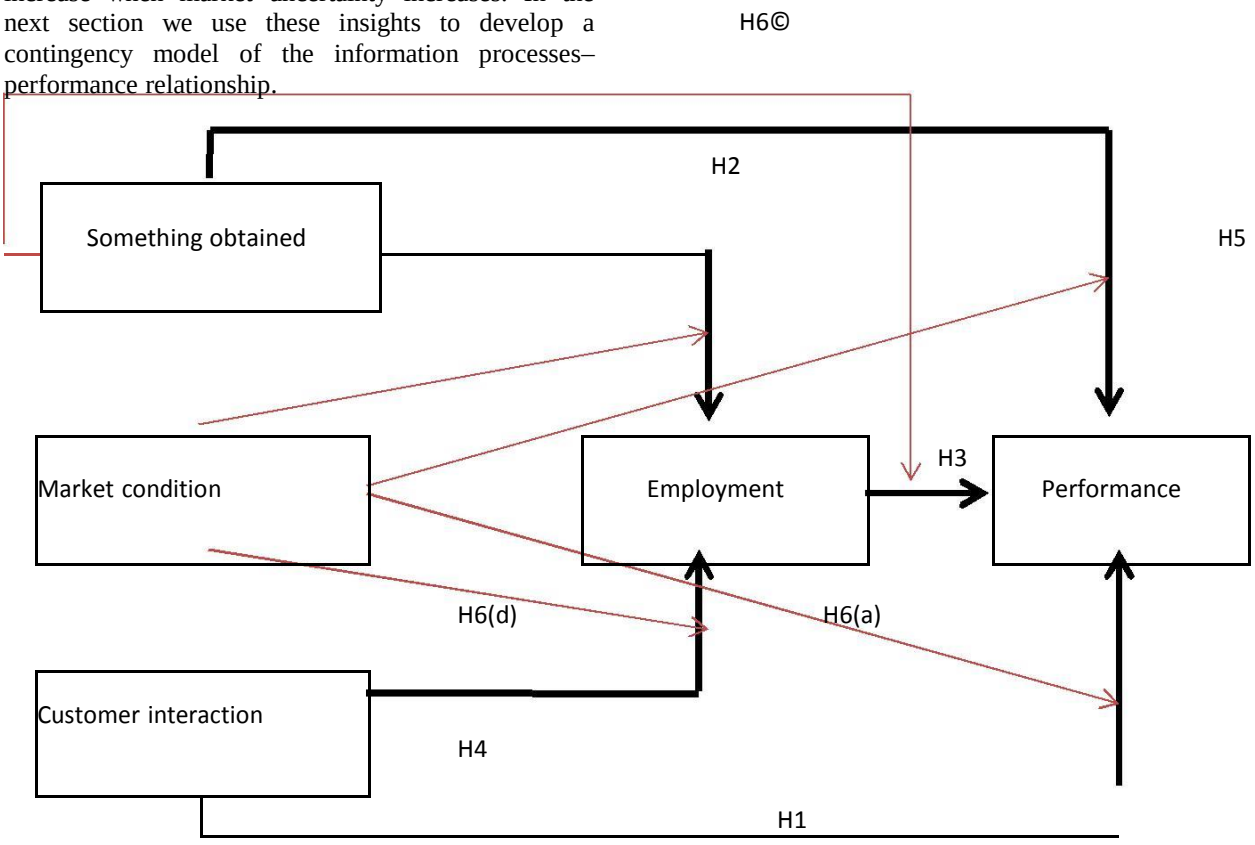

Fig. 1. Conceptual framework of market information procedure and new venture performance
Appease effects of market information procedure and new venture performance

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4.1. Market information processes and performance

According to prior research of business process knowledge (Li and Calantone, 1998), we define business process interaction processes as a set of behavioral activities designed to continuously (1) collect information through direct interactions with business process s and (2) process collected information. These activities enable the firm to collect, organize, and structure business process (Morgan et al., 2005). These processes with business process s, learn about their current and potential needs for business process, analyzing business process information, and using business process s to test and evaluate for business process. Firms can use the information generated by these processes to develop business process that deliver benefits that are valued by target business process s and unavailable from competitive product offerings (Day, 1994). In addition, this information can help the firm craft strategies designed to maintain business process relationships and increase business process loyalty (Yli-Renko et al., 2001). This reasoning is supported by empirical studies indicating that business process knowledge can improve relative for business process advantage (De Luca and Atuahene-Gima, 2007) and favorably influence the for business process probability of growth (Chrisman et al., 2005). These considerations suggest the following hypothesis:

H1. In established markets, for business process performance is positively related to the use of business process interaction processes.

Acquisition refers to the collection of primary and secondary information from both internal and external resources (Rindfleisch and Moorman, 2001). It includes processes for acquiring information about business process s, competitors, business process and others who influence business process s' decisions. The use of this information helps firm managers identify opportunities and threats and thus facilitates effective strategy development (Ozgen and Baron, 2007). We define formal market information acquisition processes to be documented policies and business process for the collection of primary or secondary information from organizational stakeholders. In contrast, the formal market information acquisition processes construct focuses on policies and business process that specify the information acquisition behaviors that should be performed by employees. Shane and Delmar (2004) identify several benefits of formal business planning processes that should extend to the use of formal processes for the acquisition of market information. In particular, formal processes can help goals and objectives of the business process information acquisition activities and improve the efficiency of those activities. Because these benefits should improve information and decrease the neglecting important sources of information in favor of more easily available information sources (Day and Nedungadi, 1994), we hypothesize that:

H2. In established markets, business process performance is positively related to the use of formal processes for market information acquisition.

Utilization is defined as the direct or indirect use of market information in decision-making and problem-solving (Moorman, 1995). Existing research indicates that utilization processes have a positive impact on both business process development and firm performance (Keh et al., 2007). We define formal market information utilization processes and procedures that specify how market information should be used to make decisions. For several reasons, we expect that formal processes for information utilization will improve business process performance. First, both Castrogiovanni (1996) and Shane and Delmar (2004) state that formal utilization processes can improve the way managers think about problems and increase the variety of information used to make decisions. In addition, formal processes help manager's information by serving as a form of organizational memory that incorporates learning from previous decision processes and outcomes (Day, 1994). Formal processes can also reduce the time needed to make strategic and tactical decisions. Finally, formal processes simplify the tasks of identifying implementation issues and developing plans to address those issues (Castrogiovanni, 1996). Therefore, these considerations suggest the following hypothesis:

H3. In established markets, business process performance is positively related to the use of formal processes for market information utilization.

4.2. Antecedents of formal processes for information utilization

For several reasons, firms that have interactions with business process s will seek to their strategic decisions reflect the information gathered from business process s. Existing research indicates that the information is an increasing function of the cost of that information

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(Sinkula, 1994). Furthermore, interaction is that is perceived as meaningful, which also increases the information use. As the perceived importance of information rises, firms are adopting strategies to collected information is actually used. Studies of formal planning in small firms (Chrisman et al., 2005) suggest that strategy for encouraging information utilization is the development of formal processes for using market information. Thus we expect that formal processes for information utilization will be an increase the business process interaction processes. In addition, firms that have formal processes for information collection are to recognize the value of formal processes for information utilization. Thus we hypothesize that:

H4. The use of formal market information utilization processes is positively related to the use of business process interaction processes.

H5. The use of formal market information utilization processes is positively related to the use of formal processes for market information acquisition.

4.3. The moderating effects of established versus emerging markets

When business process and preferences are stable, business process s can design marketing strategies based on their existing knowledge of business process. If the firm's marketing reflects these preferences, the firm's marketing may also remain stable over time. However, when market turbulence is high, the value of the firm's existing stock of knowledge declines. To adapt to changing business process preferences and the emergence of new business process, firms must interact with business process s. Thus we expect that the impact of business process interaction on performance will be relatively higher in emerging markets. Similarly, we expect that the impact of formal processes for information and utilization on business process performance will be relatively higher in emerging markets. Thus we hypothesize that:

H6 (a)–(c). The positive relationships between business process performance and (a) business process interaction, (b) acquisition, and (c) utilization are higher in emerging markets.

When business process and preferences are stable, the value of formal processes for information utilization declines, because the firm encounters less new information (relative to firms in emerging markets). In addition, firms serving markets are more likely to have a stable marketing over time. As a result, the incremental value of formal information utilization processes is lower for firms that serve markets. For this reason, variations in the use of formal processes for information collection and business process interaction are relatively less related with variations in the use of formal processes for information utilization. This reasoning suggests that:

H6 (d)–(e). The positive relationships between utilization and (d) business process interaction and (e) acquisition are higher in emerging markets than in established markets.

5. METHOD

5.1. Survey development

In this section we adopt existing items from the marketing and innovation literatures. To ensure validity and the appropriateness of items for studying business process s, we pre-tested the survey through interviews with six founders of four business process s. The interviews consisted of three parts. First, founders were asked for their opinions regarding the usefulness of market information in their business process s. In particular, we wanted to investigate the nature of market information collection to measure market information activities. Second, the founders were asked to evaluate whether our study hypotheses describe their own experiences adequately. The third part of the interviews addressed founders' perceptions of the relevance and completeness of scale items drawn from the literature. Each founder was asked to complete the survey of the researchers. The pre-test participants had no problems responding to the 7-point scales used in the questionnaires. Several questionnaire items were modified based on suggestions from these participants.

5.2. Data collection

Our sampling frame consisted of business process firms that were members of the 2013–2014 Inc 120 business process, which is the most comprehensive database of its kind in the Bandar emam at mah shar, contains information about business process -backed firm employment, business status, and ownership status. For the 2013–2014 time period, this database contained complete information on 120 business process -backed firms. The Inc 500 database includes the fastest-growing private companies in the Bandar emam at mah shar, as selected by magazine. Due to budgetary constraints, we randomly selected 500 business process -backed from the business process. One database and the 238 fastest-growing business

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process s from the Inc 120. In 2014 we mailed each firm a packet that included a personalized letter, the survey, and a return envelope with an individually-typed return-address. From the initial mailing, 134 mailing packages were returned due to undeliverable addresses or names, reducing the sample size to 866. After four follow-up letters, we received a total of 125 completed questionnaires, representing a response rate of 18% by 2014. To increase our response rate, in 2014 we resent our survey to the 500 non-responding firms using priority mail. After one follow-up mailing, we received an additional 111 completed surveys from this second data collection, which increased the total number of usable surveys to 247 (a total response rate of 29.9%). Therefore, we contacted all 247 firms that responded to our original survey and requested information regarding their profit margin (profit divided by revenue). Of the original 259 respondents, 224 provided this information, representing 86% of the respondents to the first survey and 26% of the original sample. The age of respondent firms ranged from 0 to 7 years, and the number of employees ranged from 11 to 450.

We used several variables to test for the presence of non-response bias. We found no significant differences in firm size ($F=0.34$, $p>0.10$) and firm age ($F=0.12$, $p>0.10$) between the participating firms and non-participating firms. We also found no significant difference in the fraction of firms representing the following industries: petrochemical company ($F=0.04$, $p>0.10$), pharmaceutical and medicines ($F=0.04$, $p>0.10$), consumer electronics and electrical equipment ($F=0.04$, $p>0.10$), semiconductors and computer related products ($F=0.00$, $p>0.10$), and home appliances ($F=0.06$, $p>0.10$). Based on these results, non-response bias does not appear to be a problem in our data.

5.3. Study measures

Deleted items are marked with an asterisk. The end points for each scale item ranged from 1 (Strongly Disagree) to 5 (Strongly Agree) for all activities involved with market information. Business process Interaction is based on a four-item scale developed by Li and Calantone (1998). Our confirmatory factor analyses led us to drop two problematic items. Because one deleted item addressed the outcomes of business process interaction rather than behavior, it appeared to be a reasonable candidate for deletion. The second deleted item addressed the use of business process research techniques such as surveys or focus groups. Because existing research indicates that small firms are relatively rely on these kinds of survey techniques (Callahan and Cassar, 1995), the deletion of this item also appeared reasonable. The items in this scale address whether the firm has formal processes for collecting information from various information sources. In this case our confirmatory factor analyses led us to drop two problematic items that measured whether the firm had formal processes for collecting information about (1) competitor activities and (2) relevant publics other than business process s and competitors. The remaining items address the use of formal processes for collecting information from business process, reexamining the value of information collected in previous studies, and collecting information from external experts. Relative to the original scale, the refined scale appear to be more closely aligned with the business process interaction scale, in the sense that the latter measures business process interaction behavior while the former measures the existence of policies and procedures to guide the collection of business process information. These items address whether the firm has formal processes for utilizing market information. Based on our confirmatory factor analyses we dropped four items from this scale. Two of the deleted items dealt with project evaluation and reliance on market information. Two additional deleted items addressed the dissemination of market information to functions/departments and the role of market information providers in strategy formation. The remaining items measure the use of formal processes that use market information for solving specific problems, for providing feedback to decision makers, and as an aid for project decision-making. Our performance measure, Profit Margin, is measured as the ratio of firm profit to firm revenue in the firm's most recent fiscal year. Firm size is measured as the number of employees at the time of our first survey, and firm age is measured as the number of years between the time the firm was founded and the time of our first survey. We also asked respondents to classify their primary market as either an established market or an emerging one. Market Condition is a variable that takes the value 1 if business process needs are well-defined and stable and 2 if business process needs are not well-defined and are changing. In order to examine the validity of this classification, we also asked respondents to indicate the strength of their agreement or disagreement with the following items: (1) Market needs are well-defined in this industry; (2) We are witnessing demand for our products and services from business process s who never bought them before; and (3) New business process s tend to have product-related needs that are different from those of existing business process s. The correlation between the mean

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of these three items (computed after reversing the first item) and Market Condition was 0.58 (p>0.01), indicating that the categorical variable is a reliable measure of the stability of business process preferences and market segment composition.

6. ANALYSES

6.1. Measurement model

To test our research hypotheses, we followed the two-step approach for structural equation modeling recommended by Anderson and Gerbing (1988). In the first step, we assessed and validated the psychometric properties of the measurement model and purified measures. In the second step we estimated the structural equation model depicted in Fig. 1.

constructs	item	Standardized factor loading	Goodness of fit statistics	Composite reliability	Discriminant validity			
ACQI	ACQU1	0.52***		0.65		ACQU	INTE	UTIL
	ACQU4	0.61***	X^2 =25.93		ACQU	0.62		
	ACQU5	0.71***	df = 18					
INTE	INTE1	0.92***	X /df=1.59	0.74	INTE	0.12	0.73	
	INTE4	0.53***	GFI= 0.96					
UTIL	UTIL2	0.83***	CFI=0.96	0.72	UTIL	0.63***	-018*	0.68
	UTIL4	0.64***	IFI=0.97					
	UTIL6	0.41***	RMSEA=0.06					

We began with a series of confirmatory factor analyses designed to identify problematic items. After deleting these items, we evaluated the final measurement model on three criteria: discriminant validity, and unidimensionality and reliability. The results, which are summarized in Table 1, indicate that the measurement model fits the data well. In particular, the overall fit indices all exceed the critical level of 0.91 (GFI=0.98, CFI=0.98, IFI=0.98). In addition, RMSEA is less than critical level of 0.11 (RMSEA=0.06) and the ratio χ^2/d.f. is less than 2 (Bentler, 1990). The standardized loadings of all measurement items are highly significant demonstrating adequate Type equation here.validity. Examinations of the modification indices, residuals, and overall fit indices reveal no substantial departures from unidimensionality. The construct reliabilities are reported in Table 1. The composite reliabilities range from 0.69 to 0.75, indicating that the measures are highly reliable. Examination of the pattern of standardized residuals further indicates that there is no deviation from the external consistency criteria of Anderson and Gerbing (1982). The largest standardized-residual variance is 1.94 and less than 2.59, which is also consistent with unidimensionality. To assess discriminant validity, we first computed the square root of the average variance explained ($\sqrt{(AVE)}$) for each construct. As shown in last column of Table 1, for each construct, the relevant $\sqrt{AVE}$ is larger than the correlation between any pair of the two constructs in this study, indicating that the constructs have discriminant validity (Fornell and Larcker,1981). In particular, our analysis clearly indicated that consumer interaction processes and formal processes for market information acquisition were distinct constructs. Based on the preceding analyses, we concluded that the hypothesized measurement model adequately fit the data and that testing of the structure model was appropriate. Table 2 contains descriptive statistics for the measurement model, including variable means, standard errors, and correlations.

7. RESULTS

To test the hypothesized model, we divided the sample into two groups: one consisting of business process facing an established primary market (107 firms) and the second consisting of business process facing an emerging primary market (91 firms). We then estimated a two-group structural equation model (Anderson and Gerbing, 1988). The results of the analysis are summarized in Fig. 2. The goodness-of-fit statistics suggest that the two-group full structural model fits the data well (χ^2=97.22, d.f.=69, χ^2/ d.f. = 1.42, GFI=0.94, CFI=0.95, IFI=0.95, RMSEA=0.05). We then compared the unconstrained models with a series of single-constraint models, each of which forced one model coefficient to be equal across groups. If we found that the unconstrained model had a significantly better fit than the constrained model, we concluded that the focal path coefficient was

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significantly different for established and emerging markets. Fig. 2 reports the parameter estimates and significance levels for each path in the two-group structural equation model. Within established markets, we found that formal processes for market information utilization (β=12.62, p>0.01) positively influence performance. In addition, we found that formal processes for market information acquisition (β=0.93, p>0.01) positively influence the use of formal processes for market information utilization. These results support hypotheses H3 and H5. In contrast, business process interaction has a negative and significant impact (β=−0.37, p>0.01) on the use of formal processes for market information utilization. Neither formal processes for market information acquisition nor business process interaction has a significant effect on performance. These results fail to support hypotheses, H1, H2, and H4. Within emerging markets, we found that formal processes for market information acquisition positively influence performance (β=6.84, p>0.01) and that formal processes for market information utilization also increase performance (β=6.62, p>0.01). In addition, we found that formal processes for market information acquisition (β=0.42, p>0.01) positively influence the use of formal processes for market information utilization. However, the coefficient linking performance to the level of business process interaction is not significant, while the coefficient linking the level of business process interaction with formal processes for market information utilization is negative and significant (β=−0.21, p>0.10). With regard to between group differences, we hypothesized that the positive effects of business process interaction and formal processes for market information acquisition and utilization would be greater in emerging markets than in established markets. In general, this hypothesis was not supported (Table 3). Our analysis does indicate that the relationship between formal processes for market information acquisition and performance is significantly higher in emerging markets relative to established markets ($\Delta\chi^2_{(1)}$ =5.05, p>0.05) which supports Hypothesis H6(b). However, we also found that the positive relationship between formal processes for market information utilization and performance is significantly higher in the markets relative to emerging markets ($\Delta\chi^2_{(1)}$ =2.74, p>0.10), which contradicts hypothesis H6(c). In addition, the positive relationship between formal processes for market information acquisition and utilization is significantly higher in the market compared to emerging market ($\Delta\chi^2_{(1)}$ =5.28, p>0.05), which contradicts hypothesis H6(e). Finally, the coefficients linking business process interaction with performance H6 (a) and business process interaction with utilization H6 (d) do not vary significantly depending on market condition. Table 4 summarizes the results of our hypotheses tests.

Descriptive statistics: mean, standard deviation, correlation matrix

	Mean	SD	ACQU 1	ACQU 4	ACQU 5	INTE1	INTE4	UTLI2	UTLI4	UTLI 6	PE RF	Age
ACQ U1	4.65	1.52	1.00									
ACQ U4	3.68	1.65	0.33***	1.00								
ACQ U5	4.73	1.64	0.34***	0.42***	1.00							
INTE 1	4.64	1.62	0.04	0.03	06	1.00						
INTE 4	3.89	1.61	0.6	-0.05	0.00	0.52***	1.00					
UTLI 2	4.83	1.64	0.19***	0.34***	0.41***	-12**	-0.13**	1.00				
UTLI 4	4.74	1.63	0.13***	0.24***	0.35***	-0.05	-0.5	0.52***	1.00			
UTLI 6	3.84	2.27	0.05	0.7*	0.12**	-0.18**	-0.03	0.33***	0.23***	1.00		

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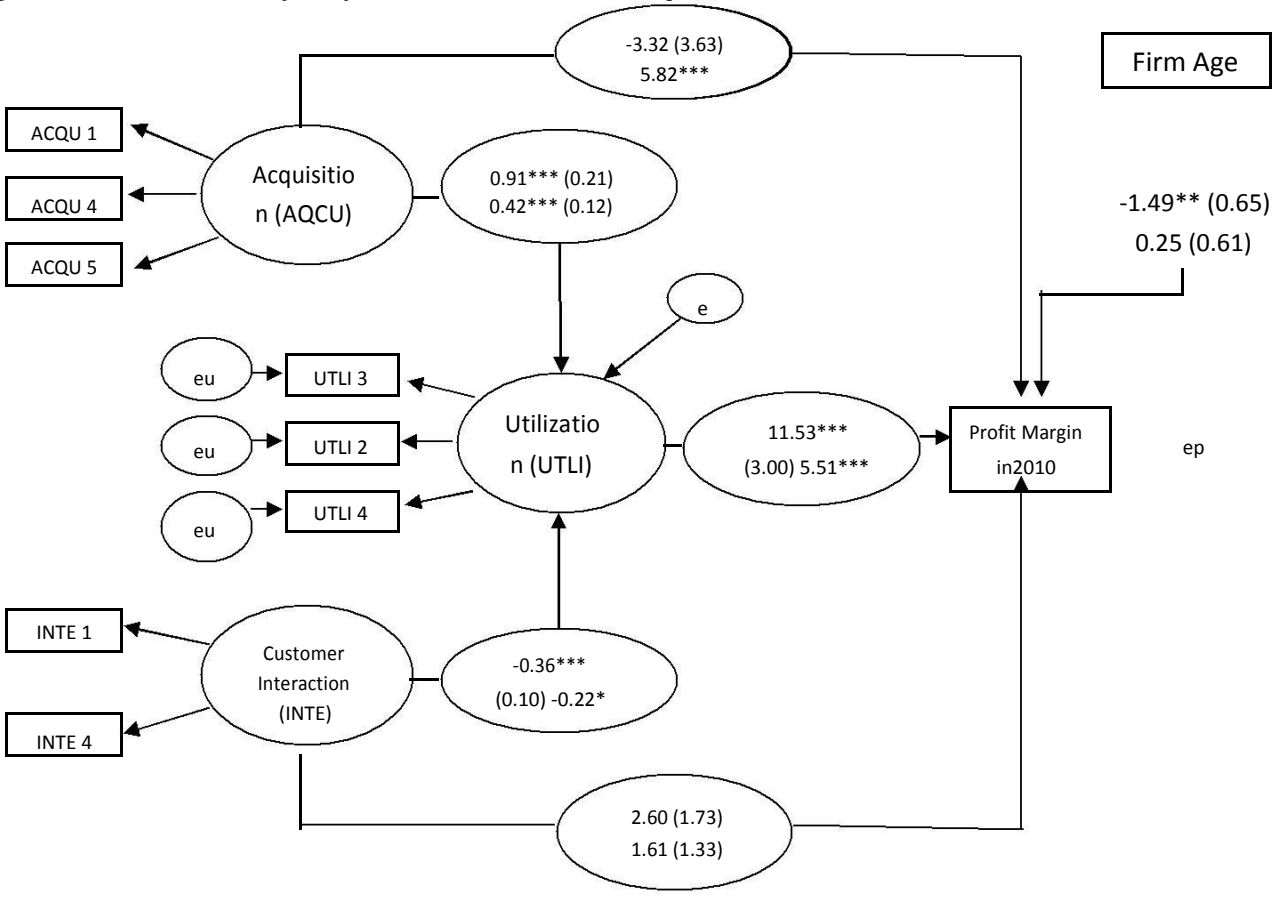
Fig.2. Results of two set analysis by full information structural equation model



8. CONCLUSIONS

In this paper we have developed a conceptual model linking two kinds of information processes to business process success. We hypothesized that business process performance is an increasing function of (1) the use of processes designed to create continual interaction with business process s and (2) the use of formal procedures for collecting and utilizing market information. We also hypothesized that these linkages will be stronger among business process serving emerging markets. We tested these hypotheses using data collected from 120 business process located in the Bandar Imam at mahshar.

Our findings indicate that, regardless of market conditions, formal processes for the collection of market information are positively related with the use of formal processes for market information utilization, and this relationship is stronger in the markets. In addition, business process performance is an increasing function of the use of formal processes for utilizing market information, and the impact is again stronger in the markets. We also found that, in emerging markets, the use of formal processes for collecting market information has a direct, positive and significant relationship with business process performance. We also found two surprising results. Regarding to our hypotheses, our findings suggest that formal processes are more valuable in the markets. We also found a negative relationship between the level of business process interaction and the level of formal processes for information utilization. Our research has several important implications for entrepreneurs. Regardless of whether business process serve established or emerging markets, our findings indicate that business process s can improve their performance by adopting formal processes for market information acquisition. From a practical perspective, a formal process should (1) identify potential sources of market information (e.g., business process visits, trade shows, publications, etc.) and the kinds of information

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potentially available from each source, and (2) specify the frequency with which information should be collected from these sources. The process should also identify who is responsible for collecting information from each source. In addition, because important information may surface outside of scheduled collection activities, there should be a process to ensure that this "unscheduled" information is captured, stored, and made available to decision makers. Because business process typically have limited resources (Mohan-Neill, 1995) and because the value of information varies across sources, it may be necessary to prioritize the firm's information sources and access some more frequently than others. The potential danger of this prioritization is that, as a result of changes in business process preferences or the emergence of new business process segments, an information source that is perceived to be relatively unimportant now may become important in the future. For this reason, the business process should make the reasons for its prioritization decisions and have a process for revising its prioritization of information sources in response to new information about market trends. We also find that business process s can benefit from the use of formal processes for market information utilization. The goals of a formal information utilization process typically include a decision options considered, expanding the kinds of information used to evaluate those options, and developing a fuller understanding of the various implications arising from the information collected by the firm. Thus it may be helpful to monitor the time needed to make decisions, look for opportunities for parallel processing, and identify potential shortcuts for use when quick decisions are needed. A second is that formal processes for information utilization may contain implicit judgments about attractive versus unattractive decision options, as well as useful versus non-useful information. Often these judgments are based on the firm's existing understanding of the markets it serves and its competitive environment. To ensure that the firm's formal processes do not affect decision-making, these judgments should be made and the firm should have a process for revising these judgments based on new information.

Structural model	**Goodness-of-fit**	**Test of hypotheses**
Model 1: hypothesized	**(65)** = 95.14, /d.f.= 1.36, GFI = 0.90, CFI = 0.91, IFI = 0.91, RMSEA = 0.04	Test for hypotheses 1, 2, 3, 4, and 5.
Model 2: Set path coefficient from *customer interaction* to *performance* to be equal across two group	**(63)** = 96.31, /d.f. = 1.32, GFI = 0.92, CFI = 0.91, IFI = 0.92, RMSEA = 0.03	Test for hypothesis 6(a) Model 2-model 1:Δ (1) = 0.12, Not significant at p = 0.10
Model 3: Set path coefficient from *Acquisition* to *performance* to be equal across two group	**(67)** = 101.24, /d.f. = 1.38, GFI=0.91, CFI = 0.90, IFI = 0.91, RMSEA = 0.04	Test for hypothesis 6(b) Model 3-model 1 :Δ (1) = 5.01,
Model 4: Set path coefficient from *Utilization* to *performance* to be equal across		

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two group		
		Significant at $p = 0.05$
	(66) = 97.83, /d.f. = 1.39, GFI = 0.91, CFI = 0.90, IFI = 0.91, RMSEA = 0.04	Test for hypothesis 6(c) Model 4-model 1 :Δ (1) = 2.61, Significant at $p = 0.10$
Model 5: Set path coefficient from *customer interaction* to *Utilization* to be equal across two group	**(66)** = 95.73, /d.f. = 1.34, GFI = 0.90, CFI = 0.93, IFI = 0.93, RMSEA = 0.03	Test for hypothesis 6(d) Model 5-model 1 :Δ (1) = 0.53, Not significant at $p = 0.10$

Test for hypothesis 6(e)

Model 6-model 1 :Δ (1) = 4.25,

8.1. Limitations and directions for future research

Our conclusions must be qualified in several ways. First, because our sampling frame consisted of business process -backed firms and firms listed in the Inc 120, our respondents represent rapidly-growing firms. Moreover, we surveyed existing business process, so our results may be affected by survivor bias. Second, we relied on single informants to provide insight into the information processes of respondent firms. Because these firms are start-up business process s, there are good reasons to believe that most of our respondents were well-acquainted with these processes, and that the incremental value of multiple informants would has been small. Nevertheless, it is possible that in some of the larger firms in our sample, respondents may have had incomplete information about the data collection processes within their firms. Third, our study focused on the use of formal processes for information acquisition and use. Under some conditions, informal processes may be as effective as formal processes. Additional research opportunities arise from the unexpected findings reported above. First, we hypothesized that the value of formal Processes would be greater in emerging markets, because formal processes can help ensure that (1) information acquisition efforts are comprehensive in terms of the sources used to collect information (2) information utilization efforts are comprehensive in terms of the information used to make and implement strategic and tactical decisions. However, our findings suggest that formal processes are more valuable in established markets. One possible explanation for this result is that, among the business process in our sample, formal acquisition and utilization processes were not comprehensive. Given the human and financial resource constraints faced by start-up firms (Mohan-Neill, 1995), it is possible that the formal processes developed by business process s tend to focus on general guidelines that lack detail. As the firm matures and its resources expand, the employees responsible for market information acquisition and utilization change. To test this explanation, future research should explicitly measure the comprehensiveness of formal processes for information collection/use and assess the relationship between comprehensiveness and performance. Formal processes may also lack comprehensiveness because they are based on existing knowledge about business process and markets (Day, 1994). As a result, when business process states are changing are emerging, prioritizations based on existing knowledge may lead to delays in detecting emerging market trends. Similarly, formal utilization processes that prioritize information based on existing knowledge may lead firms to undervalue information

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about changing business process tastes when making product design or communication decisions. Thus future research should explore the degree to which the formal information processes used by business process constrain the ways in which market information is collected and used within the firm. A second surprising result involves the negative relationship between the level of business process interaction and the level of formal processes for information utilization. One possible explanation for this result is that, as a result of close interactions with business process, firms feel confident about business process reactions to product and communication initiatives. As a result, the perceived benefits of formal information processes may be lower than the perceived cost of establishing such procedures. If this explanation is correct, then firms with high levels of business process interaction should report less informal use of market information. To test this possibility, future research should collect separate measures of formal and informal processes for information utilization. Other research opportunities arise from extensions of the theoretical model examined in this paper. The research described here focused on the direct impact of market information processes on firm performance. We believe that this focus is appropriate in start-up business process, which lack established product lines that generate significant revenue for the firm.

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