The Importance of Governance in Digital Transformation: A Case Study of e-CRM Implementation in a Malaysian Petrochemicals Company


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Abstract

Many organizations embrace digital technologies to drive changes in enterprise business models and ecosystems that will not only enable them to weather the increasing environmental dynamics but also thrive on it. However, numerous internal and external factors have caused very few of them to continue their digital transformations in the right direction. For the rest, the journey to digital transformation have not resulted with businesses achieving complete value of a digitally-enabled change. Likewise, most Malaysian companies who have invested significantly in their digital endeavor have obtained very basic levels of return on their investments. This research examines the effects of governance on digital transformation by scrutinizing the implementation of e-CRM system at a Malaysian petrochemicals company. An exploratory study was initiated by interviewing key people at the company, leading to the adaptation of a survey questionnaire. Data was collected from 295 employees at various levels of management. Correlation analyses were carried out based on the parametric data. Governance was found to be significantly affecting digital transformation awareness, implementation and quality. Such findings demonstrate the importance of governance for supporting strategic decision making to deploy digital transformation in the manufacturing sector of an emerging economy.

Keywords: Digital Transformation, Governance, Culture.

Introduction

It is not surprising that 88% of Fortune 500 companies that were considered giants since the 1950s have ceased to exist today. Under such circumstances, writings on corporate strategy have not been kind towards the likes of Polaroid, Blockbuster, Kodak, Toys R Us, or Xerox. Corporate failures are also associated with more contemporary examples such as Nokia, BlackBerry, and Yahoo, in addition to the evolution of certain time-honored industries like publishing, taxi and hotel that are paving the way for disintermediation as well as totally new markets. All of these are parts of a recurring...
theme among majority of traditional businesses which have been sidelined by today’s real movers and shakers that mostly exist on digital platforms and running on unique business models. These unconventional firms, like Facebook, Alibaba, Amazon, Netflix, Uber, and Airbnb, have achieved extraordinarily high market value for their innovative use of technology to maintaining operational effectiveness and efficiency, as well as aggressively creating new products and services that appeal to the increasingly tech-savvy global consumer base. Yet, exploiting and integrating new digital technologies is one of the most complicated challenges that all companies face in their pursuit to competitiveness.

The idea of digital transformation has been mooted years ago, around circles of business leaders in the developed world, especially in the U.S. and the U.K., with nearly 90% of them anticipating that such high priority investments shall have significant strategic contribution to their future overall business (Bonnet, Ferraris, Westerman and McAfee, 2012). Amid increasing geopolitical, economic or environmental uncertainties, firms are forced to apply digital technology to weather, leverage and thrive on these challenging business situations. This trend has persisted over time that it is evident today for most mature businesses to rely on integrating digital technologies such as social, mobile, analytics and cloud to solving distinct business problems or changing the way their businesses work (2015 Digital Business Global Executive Study and Research Project, MIT Sloan Management Review and Deloitte). By 2018, however, International Data Corporation (IDC) predicted that one third of top twenty market share leaders in most industries will have been significantly disrupted by new entrants who utilized the 3rd Platform (social, mobile, analytics and cloud) to create totally new business models that challenge incumbent companies at their own game. Such disruptions may not only alter the landscape of business, but also the pace and scale of change at the individual, societal and organizational levels.

Malaysia may have endeavored into its first instance of digital transformation during the mid-1990s when the Multimedia Development Corporation (MDeC) was set up in 1996 to oversee the implementation of Multimedia Super Corridor (MSC) Malaysia, while advising the Malaysian government on legislation, policies and standards for multimedia operations. Triggered by the success stories of the Silicon Valley and Cambridge Science Park in the 1970s, as well as other technopoles in developed nations such as in Barcelona, Delft, Melbourne and Toronto, MSC Malaysia is an ongoing knowledge-based urban development (KBUD) initiative that was aimed to fast track the catching up process with its developed nation counterparts (Yigitcanlar and Sarimin, 2011; Yigitcanlar and Bulu, 2015) in regard capitalizing more on knowledge and technological infrastructure, concentrate on inclusive education programs to enhance technological prowess and provide opportunities for connecting to the global economy (Yigitcanlar, Lonnqvist and Salonius, 2014). The advent of KBUD has also witnessed major cities in emerging economies like Brazil, China, Taiwan, Turkey, Dubai and Mexico embarking on the similar path with Kuala Lumpur (Zhao, 2010). From its humble beginnings, MSC Malaysia has promoted and contributed to ICT utilization within the public offices as well as in the private sectors. The public sector in Malaysia has embarked on many different IT projects including a diverse set of e-government services, while the corporate sectors have their own fair share of IT adoptions that range from cybersecurity, the enterprise resource planning (ERP), cloud computing, customer relationship management (CRM), supply chain management (SCM), salesforce automation (SFA), big data analytics (BDA), and digital dashboards.

Although about 98% of all ICT investments in 2015-2018 by Malaysian companies may have employed significant effort and expense on implementing this array of digital technologies, the returns on investments have not been forthcoming (IDC, 2015). There are even many more who have yet to embark on this transformative journey. Such complexities are indicative of the fact that implementing digital transformation in developing countries are heavily influenced by numerous challenges and issues, which include technical infrastructure, financial, vision and strategy, security and privacy, good coordination, leadership, skills and change management (Bharadwaj, El Sawy, Pavlou and Venkatraman, 2013; Matt, Hess and Benliyan, 2015). Other additional factors that should also be considered are legal issues, human resources, lack of political will, governance, organizational culture and social conditions (Almarabeh and AbuAli, 2010; Banerjee and Chau, 2004; Jorgensen and Cable, 2002).

The conflation of various research findings thus far, however, cannot be easily generalized as many issues and challenges facing digital transformation in developed and developing countries may also vary (Chen, Chen, Huang and Ching, 2006; Avgouropoulos, 2010). In addition, majority of the literature on digital transformation in developing countries also lacks strong empirical evidence as compared to those done in developed nations (Wescott, 2001; Dada, 2006). These inconsistencies in research findings concerning digital transformation, as well as the
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limited approaches being applied to study it, underline the lack of understanding of this phenomenon. These, therefore, provides the precursor to this empirical examination of such phenomenon in Malaysia. A basic question is posed: What can contribute to successful digital transformation for Malaysian companies? This is crucial amid the escalation of interests in digital transformation from the government, industry and academics in the pursuit of establishing the country as a developed digital economy for its future growth sustainability. In specific, this research investigates the effects of governance on e-CRM implementation at a Malaysian petrochemical company. The results from this research can provide some practical lessons to assist companies in emerging economies to manage and develop suitable digital transformation strategies.

Literature Review

In many different facets of strategic information systems (IS) research, whether they come from either the practitioners’, theoretical, social, industrial or organizational perspective, digital transformation has recently surfaced as a pivotal phenomenon. For business organizations, digital transformation can be the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies. It is multi faceted and usually occurs at an accelerated pace. But a more wholesome definition by Vial (2019), after his thorough review of the subject matter, presents digital transformation as a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication and connectivity technologies. This definition is further supplemented by an inductive framework that showcases the relationships that exist between eight building blocks of digital transformation as illustrated in Figure 1.

First of all, the typical digital technologies that are applied in digital transformation are identified. While the list of technologies may not be exhaustive, largely due to the rapid technological changes, the most common technologies being applied by business organizations today include social technology (Oestreicher-Singer and Zalmanson, 2013), mobile technology (Hanelt, Piccinini, Gregory, Hildebrandt and Kolbe, 2015), big data analytics (Duerr, Wagner, Weitzel and Beimborn, 2017), Internet of Things (IoT) (Petrikina, Krieger, Schirmer, Stoeckler, Saxe and Baldauf, 2017) and cloud computing (Clohessy, Acton and Morgan, 2017) that thrive on the digital platform (Tan, Pan, Lu and Huang, 2015). They could be applied in singularity, or in a combination, in which a few, if not all, of those technologies converge to provide an enhanced level of utility to their users. This may indirectly create disruptions in the market, in which the general consumer behavior and expectations are totally altered (Chianias, 2017). Rather than responding, it is fast becoming a strategic imperative for firms to anticipating changes in customer expectations through analysis of abundant consumer data (Kane, 2014). Such disruptive force may also give birth to new players in the market that can effectively challenge the incumbents, thereby affecting the competitive landscape in a far more complex manner (Mithas, Tafti and Mitchell, 2013).

![Figure 1. The building blocks of the digital transformation process (Vial, 2019)](image)
The disruptive nature of digital technologies may be perceived as opportunities or threats, but both demand a response from firms to remain competitive. Two notable strategic concepts that respond to these needs emerged from literature: digital business strategy (DBS) and digital transformation strategy (DTS). Bharadwaj et al. (2013) offer the concept of DBS as an organizational strategy formulated and executed by leveraging digital resources to create differential value. Such concept views digital transformation as a journey rather than a project, hence requiring a fusion of organizational strategy and IS strategy. In contrast, Matt et al. (2015) propose the concept of DTS that focuses on the transformation of products, processes and organizational aspects owing to new technologies. This approach separates DTS from other organizational strategies including IS strategies, by emphasizing on the transformation processes necessary in leveraging digital technologies that would enable a complete revamp of current business models.

This revamping or redefining of business models highlights the ability to uncover new paths for value creation through digital transformation (Osterwalder and Pigneur, 2010). It begins with the conviction that digital technologies alone provide little value to a company, but it is their use within a specific context that allows a firm to find new ways to create value (Kane, 2014). There are five new ways to create value, in which the first include developing novel value propositions (Gunther et al., 2017). Netflix is an ideal example of this, on how an originally physical movie rental business model was transformed into the first large-scale video streaming service provider. Secondly, creating value networks that encourage co-creation among network actors (Tan et al., 2015a). Third is by introducing digital channels (Hansen and Sia, 2015) to communicate effectively with customers (via social technology-based CRM systems) and partners (via mobile technology-based SCM systems), while allowing software to coordinate activities across organizations (Klotzer and Pflaum, 2017; Porter and Heppelmann, 2014) such as those involved in smart procurement practices using BDA and IoT. Finally, value creation can materialize organizational agility (Sambamurthy, Bharadwaj and Grover, 2003) that easily allows firms to adapt to changes in the business environment, as well as ambidexterity (Haffke, Kalgovas and Benlian, 2017) in exploring for possible resources in the market and exploiting existing resources within the firm for innovation opportunities.

By applying the DTS concept, this research works on the premise of Technology Acceptance Model (TAM), which contends that there are antecedent factors to digital transformation in ensuring its value creation within a business organization, or its network in the ecosystem. Technology Acceptance Model (TAM) was introduced by Davis (1986) as an adaptation of Theory of Reasoned Action (Ajzen and Fishbein, 1980), which is specifically tailored for modeling users’ acceptance of information systems or technologies. In 1989, Davis used TAM to explain computer usage behaviour in order to explain the general determinants of computer acceptance that lead to explaining users’ behaviour across a broad range of end-user computing technologies and user populations. The basic TAM model included and tested two specific beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Perceived Usefulness is defined as the potential user's subjective likelihood that the use of a certain system will improve his/her action and Perceived Ease of Use refers to the degree to which the potential user expects the target system to be effortless (Davis, 1989). External variables (such as employee age, their level of education and employment category) may influence the belief of a person towards a system, which in turn will lead to an attitude (either positive or negative) towards the system that will result in intention to use before usage takes place. The final version of Technology Acceptance Model, as depicted in Figure 2 that eliminates the need for the attitude construct, is applied in this research as it is the most used framework in predicting information technology adoption (Paul, John and Pierre, 2003). In fact, TAM has become so popular that it has been cited in most of the research that deals with users' acceptance of technology (Lee, Kozar and Larsen, 2013). Lee and Jun (2007) argued that TAM should be able to analyze factors affecting adoption intentions beyond perceptions of convenience and usefulness. TAM attempts to help researchers and practitioners to distinguish why a particular technology or system may be acceptable or unacceptable and take up suitable measures by explanation besides providing prediction.
While value creation may definitely result from digital transformation, to optimally reap its benefits would require several structural changes throughout the business organization. Such changes bring about the issue of governance. Governance comprises all the processes of governing and relates to the interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institution. In lay terms, it could be described as the political processes that exist in and between formal institutions. In business and outsourcing relationships, governance frameworks are built into relational contracts that foster long-term collaboration and innovation. Governance is the way rules, norms and actions are structured, sustained, regulated and held accountable. The degree of formality depends on the internal rules of a given organization and, externally, with its business partners. As such, governance may take many forms, driven by many different motivations and with many different results. For instance, a corporation may be governed by a small board of directors and pursue more specific aims. In addition, a variety of external actors without decision-making power can also influence the process of governing. These include lobbies, think tanks, political parties, non-government organizations, community and media.

One of the many elements covered by governance is organizational structure. In this regard, digital transformation would demand for a setting that fosters flexibility (Sia, Soh and Weill, 2016), free access to resources and collaboration across business units (Ealey, 2014), while also affording some degrees of independence for certain critical units or cross-functional teams to explore opportunities outside company boundaries (Dreml, Wulf, Herterich, Waizmann and Brenner, 2017; Svhahn, Mathiassen and Lindgren, 2017). Apart from structure, governance is responsible for leadership issues and digital transformation normally creates new leadership roles such as the Chief Digital Officer (CDO) to translate DBS or DTS into concrete actions that influence a firm’s organizing logic (Sambamurthy and Zmud, 2000). Governance must also question the training needs of existing employees and future ones in preparation of a global digital workforce. Although digital technologies may seem autonomous, human capital can remain indispensable by equipping themselves with enhanced analytical skills to solve increasingly complex problems. However, accompanying employees through this transition poses significant challenges to most employers when costs and time are factored in (Karimi and Walter, 2015; Singh and Hess, 2017). Apart from these, governance ensures that the firm is ready to face organizational barriers that may hamper digital transformation such as inertia (Andriole, 2017; Kohli and Johnson, 2011) and resistance to change (Fitzgerald, Kruschwitz, Bonnet and Welch, 2014; Kane, 2016a).

Various research on digital transformation within Malaysia have studied its relationship with governance. Meng, Abu Samah and Omar (2013) found governance issues such as quality, availability and maintenance of infrastructure, community involvement, objective-oriented, manpower, training and credible partnerships to be critical for the implementation of ICT projects in the country. Their scope of projects cover MyCard, Telemedicine, e-government, research and development cluster, smart schools, worldwide manufacturing web and borderless marketing. Abdul Hamid and Mohd Yusof (2015) found the issues of governance and security as major obstacles in cloud computing adoption in the country. In a landmark study comparing digital transformation in Malaysia to South Korea, Ramli (2017) found incriminating evidence of poor governance that may hamper a smooth and effective execution and implementation of digital technologies in the former. Except for, perhaps having visionary leaders in the country, Malaysia seems to be rather behind in terms of technical and legislative infrastructure, financial constraints, policy and strategy, skilled workforce and coordination and integration between parties involved. A group of researchers from China, who studied the need to implement big data in the public sector also found that many agencies may not be ready to adopt the technology due to scarcity of data, uncertainty as regard policies at work and lack of workforce efficiency, all of which can be categorized as governance issues (Sarker, Wu and Hossin, 2018).
Another important element that may exist and flourish beyond the power and control of governance is organizational culture. This refers to the functions that are so ingrained into the fabric of the organization that they become part of the company values (Haffke et al., 2017). In the perspective of digital transformation, literature emphasizes on the need for firms to cultivate risk taking culture (Feher and Varga, 2017), agility (Horlach, Drews, Schirmer and Böhmann, 2017; Leonhardt, Haffke, Kranz and Benlian, 2017), learning organization and long-term orientation. Given a supportive culture and effective governance, blended with proper strategies and the right combinations of digital technologies, digital transformation may yield positive impacts to the company in the forms of operational efficiency (Adriole, 2017; Pagani, 2013; Bharadwaj et al., 2013), as well as improved performance in regard innovativeness (Svahn et al., 2017), financial strength (Karimi and Walter, 2015), growth (Tumbas, Berente, Seidel and vom Brocke, 2015), reputation (Afthanorhan et al., 2019a) and competitive advantage (Neumeier, Wolf and Oesterle, 2017). Vis-a-vis, improper administration of digital transformation may lead to issues of security and privacy associated with the pervasive use of digital technologies. Even though organizational culture is crucial to this study, its scope may be too broad to cover within the constraints of time and effort. Hence, this research only focuses on the effect of governance on digital transformation.

Such study of digital transformation requires a suitable ecosystem, with which the application of digital technologies have been introduced to improve the integration of current business processes. Based on a chance encounter with representatives from a Malaysian petrochemicals company, the researchers were informed of the digital transformation initiative that was taking place in their organization. Upon further review and approval from the management team, the petrochemicals company provided the ideal backdrop for this research. Derived primarily from petroleum (crude oil) and gas, the term "petrochemicals" was originally coined in the 1920-30s as demand for oil ramped up and chemical production from coal couldn't keep up. As the demand for olefins, polyolefins, aromatics, ethylene oxides, glycols, oxo-alcohols, ethoxylates, acrylic acids, phthalic anhydride, acetic acid, styrene monomer, polystyrene, ethylbenzene, vinyl chloride monomer and polyvinyl chloride have had a steady demand to this day, the industry remains driven on a positive trajectory. Petrochemicals can be converted into thousands of industrial and consumer products, including plastics, paints, rubber, fertilizers, detergents, dyes, textiles and solvents. Internationally, over 9 million people work directly in the petrochemicals industry, based largely on the mixture of organic chemical molecules with carbon and hydrogen atoms.

The petrochemicals company in this research is the leading integrated petrochemicals producer in Malaysia and one of the largest petrochemicals producers in South East Asia. The company became public when it offered its shares in an initial public offering (IPO) in 2010, which had attracted overwhelming response from both leading domestic and international institutional investors. The expanding business has allowed the company to prosper over the years, but issues of information and process control has become cumbersome with the increasing scale of operations. The company has embarked on a digital transformation to embrace the digital revolution in today’s global business environment. The transformation will be leveraging on digital technology to deliver greater business value both for its retail and institutional customers, thereby creating a new way of working in realizing the corporate targets and sustaining its profitability in the future. Through its transformation office, a digital task force was established in end of Q1 in 2017 consisting several representatives from different business units. The company had originally identified 3 digital ambitions as an accelerator for its digital transformation initiative, which are Salesforce Automation, Advance Analytics and Artificial Intelligence and digital Customer Experience (CRM). However, this research only focuses on e-CRM implementation at the petrochemicals company as it is deemed the most crucial during this tumultuous period of business in the oil and gas industry when upstream businesses remain conservative, while downstream remains positive (maintaining credible customer relationship will ensure business sustainability in the long run). The principles of e-CRM highlight its capabilities to improve an organization’s performance by achieving improved customer satisfaction, increased quality of goods and services, boost productivity and profits, and reducing organizational waste and costs. It no longer serves only B2C companies, but also B2B especially in handling their key accounts and for some, their distribution management.

E-CRM originally comes from existing standard operating procedures that promote customer centricity and the use of traditional external data to make organizational performance better. E-CRM has been applied in various industries, government agencies, private firms, government-linked companies (GLC), and the education sectors as well (Afthanorhan et al., 2019b). While many organizations deal with issues of data integrity and quality, it is those who
are able to connect their internal and external data via system integration and deliver e-CRM that is usable to achieve its objectives are the ones that win their customers over. Additionally, it has progressed as an approach to quality management characterized by an integrated, systematic, goal-oriented, organizations-wide strategy to improve pricing and customer satisfaction. In this ever-expanding role of e-CRM within the rapidly changing business landscape, issues such as governance which include new product, process technology and integration have forced organizations to consider a paradigm shift in its philosophy as compared to its traditional role as a program-specific tool or technique in customer service (Sashkin and Kiser, 1993).

Extant studies on e-CRM have reached inconclusive findings on factors affecting e-CRM implementation. Mature organizations acknowledge more value from e-CRM, thereafter, potentially will adopt e-CRM faster, and increased in usability level of e-CRM development as per mentioned by Lee, Kim and Park (2007). This is also backed up by Dewar and Dutton (1986), Hannsen and Hill (1989) and Mansfield (1968) who believe big or global organizations can adopt e-CRM faster and have better implementation results for e-CRM technologies. Of course, larger firms have access to more stable flow of capital and labour that allow them to invest in technology as compared to smaller firms. Nevertheless, other studies have indicated that the structural inertia of large firms may also hamper its penetration (Ko, Kim, Kim and Woo, 2008).

The incongruence of findings in this area of research indicates that more studies must be conducted to provide better understanding of this phenomenon called digital transformation, in particular the introduction and adoption of an organization-wide e-CRM system. This research attempts to fill this void by examining factors that influence e-CRM implementation in a Malaysian petrochemicals company in an emerging economy setting. This research proposes that governance will influence digital transformation in regard the users’ perceived awareness of the initiative and the perceived quality of such initiative, which would in turn affect the success of implementing such initiative. Hence, the following research hypotheses are formulated:

H1: Governance influences user perceived awareness of digital transformation
H2: Governance influences user perceived quality of digital transformation
H3: User perceived awareness of digital transformation influences successful implementation of digital technology
H4: User perceived quality of digital transformation influences successful implementation of digital technology

Based on the hypotheses above, the conceptual research framework is depicted in Figure 3 below:

![Conceptual Research Framework](image)

**Figure 3.**

**Conceptual Research Framework**

**Research Design and Methodology**

Different kinds of research issues require different kinds of data-consolidation arrangement so that the data will be relevant, impartial and consistent, accurate in finding causality, and capable of providing findings that can be generalised. As such, this research employs a mixed method approach, which follows a concurrent nested (embedded) design that includes one phase of data collection in which priority is given to one approach that guides the project, while the other approach is embedded or nested into the project and provides a supporting role. The embedded approach is often addressing a different question than the primary research question. E-CRM user surveys have become extensive in digital transformation in recent years and the survey method is expected to offer a similar spectrum of advantage for digital transformation, based on the user-centred approach. The targeted respondent information were specific to the individuals who are experiencing, using and adopting the e-CRM system. In this study, the researcher began by gathering internal survey questionnaire and adapting and adopting the questionnaire to produce a refined version. Pre-testing was conducted on the questionnaire by running the pilot study (20 respondents) and lastly,

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constructing the finalized questionnaires based on the feedback and from the interview sessions.

**Population and sample.** The population is made up of all 4659 employees at the petrochemicals company’s wholly and partly-owned subsidiaries, joint ventures and associated companies in Malaysia, China, Thailand and India. The newly introduced e-CRM system covers the expansive operations within the region, but the clientele base may even be located beyond the region itself. Cluster sampling was chosen as the most appropriate, since the targeted group will be able to maintain its homogeneity (Rahlin et al., 2019). The information collected is specific to users who apply the e-CRM system at various levels in the organization. 300 respondents were chosen from the headquarters in Kuala Lumpur. Each possesses experiences in using the tools (e-CRM) from the beginning and their input is based on their perception of the research variables as documented in the questionnaire.

**Research instrument.** This research adopted the questionnaires comprising the measurement items for governance that was developed by Ambrose, Rai and Ramaprasad (2006). Measuring the e-CRM impact refers to the work of Gable, Sedara and Chan (2008), while tools from Technology Acceptence Model (TAM) also lend support based on Venkatesh and Davis (1996). The questionnaire consists of 40 questions that is divided into two main sections, namely Section A (perceived awareness and quality of digital transformation initiative, as well as successful implementation of the initiative) and Section B on Governance. Each item was measured using a five-point Likert Scale items, ranging from “1=strongly disagree” to “5=strongly agree”. However, the perceived awareness section was scaled with from “1=strongly unfamiliar” to “5=strongly familiar”.

**Data Gathering.** The questionnaires were self-administered and distributed to 300 samples comprising enablers and executives at the company headquarters in Kuala Lumpur. 295 responses were received, resulting in a response rate of 98%. The high response rate demonstrated strong cooperation from the company during the survey.

**Analysis of data.** Quantitative methods were applied to analyze the collected data. Raw data that required to be checked and key-in into SPSS software were coded accordingly. Authenticated items were employed to gauge variables in the construct. Descriptive statistics was used to analyze, sum up and explain the examination of variables. The reliability test was performed to establish the Cronbach’s Alpha values on a range of dimensions to certify that each relevant variable is reliable. Pearson correlation analysis was applied for predicting relationships between variables.

**Discussion of Findings and Conclusions**

For this study, four hypotheses were defined. The three dependent variables with one independent variable were tested to establish the relationship between variables.

**Table 1.**

**Correlation result table**

<table>
<thead>
<tr>
<th></th>
<th>Awareness</th>
<th>Governance</th>
<th>Quality</th>
<th>Successful Implementation</th>
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</thead>
<tbody>
<tr>
<td><strong>Awareness</strong></td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.540**</td>
<td>.408**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>295</td>
<td>295</td>
<td>295</td>
</tr>
<tr>
<td><strong>Governance</strong></td>
<td>Pearson Correlation</td>
<td>.540**</td>
<td>1</td>
<td>.761**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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<td></td>
<td>N</td>
<td>295</td>
<td>295</td>
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<tr>
<td><strong>Quality</strong></td>
<td>Pearson Correlation</td>
<td>.408**</td>
<td>.761**</td>
<td>1</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
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<tr>
<td></td>
<td>N</td>
<td>295</td>
<td>295</td>
<td>295</td>
</tr>
<tr>
<td><strong>Successful Implementation</strong></td>
<td>Pearson Correlation</td>
<td>.325**</td>
<td>.761**</td>
<td>.739**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
<td>.000</td>
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<td></td>
<td>N</td>
<td>295</td>
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**.** Correlation is significant at the 0.01 level (2-tailed).
Perceived awareness. By testing the relationship between governance towards perceived awareness, the multivariate correlation analysis was 0.540 indicating the correlation is significant at the level of 0.01. This shows significant effects of governance towards perceived awareness. However, additional data received through interviews with selected respondents also identified that although the respondents may be aware of the company’s digital transformation initiative, the vision of the initiative is still unclear. The value indicates that perceived awareness is still related to perceived quality (0.408) and successful implementation (0.325), although the strength of such relationships is weak.

Perceived quality. As in the findings, the value for correlation between governance and perceived quality was 0.761, a little higher than for perceived awareness. This indicated that respondents strongly agree on the system quality, including its dimensions that include content breadth and interaction dynamism. This highlights the importance of quality in digital transformation initiatives.

Successful implementation. The correlation value for governance towards successful implementation were 0.761 which indicate similarity relationship with the earlier variables, indicating the relationship between these two variables were significant. The finding indicates that respondents generally understood that system quality, in regard the system’s integrated capabilities, were crucial in indicating the success of digital transformation.

Limitation of the Research

There are several limitations to this research. Firstly, the study only focused on a specific industry—petrochemicals, which may render its inability for generalization of research results. In addition, the company chosen for research did not focus on e-CRM alone, but also other systems such as SAP ERP. The differences between systems may also restrict the likelihood of generalization of research results.

The other limitation was the incomprehensive coverage of dimensions that derive the governance variable. The overall business process is deemed to fall under strategic planning that is not covered in this study. Aside from policy as a dimension of governance, this study assumed that the inclusion of planning and strategy will result in different research findings altogether. However, that being mention, these dimension should be strongly considered in the near future for further research.

Lastly, a glaring limitation resulted from the research approach that did not individually and separately test each dimensions in the independent variable, namely policy, integration of business process and vision. Results from such test may provide better understanding of specific factors and their relationships with digital transformation.

Vakkari (2008) mentioned that different disciplines may have different effects on the dimensions of digital transformation. Since there are many factors which affect digital transformation, as suggested in this study, different dimensions of planning and strategy is strongly considered to be affecting such transformation. In this research, the researcher focused on the effect of governance on digital transformation, but future work can be recommended to look into the implication perspective of digital transformation. Such approach may allow researchers to study the financial perspective of digital transformation, as well as overall company sustainability. Going forward, this research proposes developments on three key areas. The first is the building of organizational dynamic capabilities to support ongoing digital transformation of a company. The second is the role of integrative capabilities, as a form of dynamic capabilities, in the context of digital platform and ecosystems. The third is the micro foundations that help us understand and explain how digital transformation unfolds in practice.

Lastly, based on the feedback from interviews that were conducted, more than half of the respondents talked about improving the data quality of the digital transformation. The main issue rendered was on the insufficiency of data, lack of integration, and the system not being regularly synchronized. More information is required besides improving the system functionality to include broader research areas. In addition, the understanding of the business requirement needs to be improved for better results in digital transformation. Apart from that, respondents also claimed that they were not clear of the management vision in terms of direction and business process strategy. As suggested in this research, future studies should focus on organizational dynamic capabilities and integrative capabilities, aside from governance perspective to gain more meaningful results.

Another interesting avenue to study would also be from a cultural perspective.

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