DIGITAL TRANSFORMATION OF SAUDI ARABIA TOWARDS VISION 2030

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ABSTRACT

Digital transformation is one of the most crucial elements of the national transformation program within Saudi Vision 2030. The review of the literature highlights four main areas of digital transformation: finance, human resources, technical, and management awareness. This research aims to analyze decision-makers' commitment to digital transformation, financial feasibility, resistance to change, software compatibility, and challenges. A structured questionnaire was designed to collect primary data from employees of Government, Semi-Government, Private organizations, and entrepreneurs. The regression between cost and digital transformation awareness (DTA) implied that the financial aspects of the initiative impact the level of digital awareness initiatives. The regression based on the variables of HR and DTA, shows, that there is a positive relationship between the two variables. Correlation analysis for the variables DTA, cost, human resource, and technological perspective indicated the highest level of correlation between DTA and cost while the lowest is between the cost and technology. The results of the hypotheses tested further indicate that there are differences in perceptions in the public and private sector organizations with reference to management awareness, employee resistance, market share, and customer satisfaction. Further, the paper discusses the impact on society and policy implications for the implementation of digital transformation initiatives.

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***Keywords:** DTA-Digital Transformation Awareness, HR-Human Resources, TECH-Technology.*

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Introduction

The Saudi Vision 2030 has emphasized technology and digital transformation to a great extent. It laid emphasis on the improvements in the availability of technology and infrastructure to ensure that companies are moving on the path of digitalization. As we can also observe, the recommendations are for both the private and the public sectors to focus on moving towards digitalization in their businesses. Digital transformation is being used along with other partners in the business ecosystem to enhance the experience of all the stakeholders (Fujitsu, 2017). However, the situation of digital transformation is relatively new for businesses. Many businesses are still in the process of embracing this digital transformation. According to the IDG 2018 survey covered by Columbus (2018), 89% of the businesses plan or have already adopted a digital-based business strategy with the services sector having a 95% progress, financial services have 93% adoption and health care with 92% globally. The sectors that are globally lagging include education, high tech, retail, manufacturing, and government. Within the digital technology being used by businesses, the most common technologies include Big Data Analytics 58%, mobile technologies 59%, APIs, and embedded technologies that are being implemented.

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Justification and Reasoning for Selecting this Issue

According to Hanware (2016), research conducted showed that only 4% of the companies in Saudi Arabia and UAE can be classified as digital leaders. It also showed that 85% of the companies in Saudi Arabia feel threatened by the digital startups that are coming up globally, 59% of the companies have witnessed new entrants in the form of competition based on digital startups and 71% of the new people confessed that digital transformation poses a threat and will continue to do so in the future.

This is an assertion that digital transformation is the need of the hour and warrants attention to be studied. Furthermore, as per the Saudi Vision 2030, many non-oil sector companies need to use digitization and implement it to complete their goals of contributing to GDP. Sectors including tourism, medical, financial markets, and many more are realizing the need to transform themselves digitally and embrace new forms of business operations. Moreover, the situation has become alarming for the business. The integrated technology is changing the consumer expectations, operation, product life cycle, and strategy. It has become a matter of survival, and this applies to the Saudi firms as well who are still on the track to embracing these changes.

Saudi Vision 2030 has put the digital sector in the center space and has drawn the attention of the world's leading investors. Apart from this, the importance of this issue can be understood from the fact that Saudi Arabia stands at 8th position in the world in terms of focus on technology. As per the UN development Index Report, where Saudi Arabia was ranked 36th out of 193 countries in terms of the development of e-government facilities. These factors explain the reasons for selecting and researching this topic as it is the need of the hour in the current situation in Saudi Arabia.

Research by MIT Sloan done by Michael Fitzgerald, Kruschwitz, et al (2013) has also mentioned the benefits for the companies of using digital transformation. Few of the benefits include improved customer experiences, engagements, and service, exploring new business opportunities, and smooth operations. The majority of the results from this study revealed that although there are advantages, it is difficult to implement digital transformation. The most serious results in a positive manner have been observed in the customer area, where the companies feel they are able to better reach their customers, collect feedback and be innovative in their offerings. One example is social media where the companies have found new opportunities to reach out to customers and use analytics for customizing their deals. The survey classified the companies that are ahead of others in terms of focus on digital transformation and have drawn maximum benefit from this. These digital companies have seen improvements in their market share, profits, and growth because of their investment in digital platforms. The main benefits and changes in the case of customers include better interaction with customers, the launch of new products and services, selling existing products in an improved, unique manner, and maintaining consistency throughout multiple selling channels of the company. On the operational side, digital transformation is beneficial as it helps to improve communication channels within the company and enhance the performance of the employees. This is supported by the automation of the operations that are being carried out. Apart from this, many companies have seen the adoption of new business models that help them to develop new markets from scratch and convert the existing physical businesses into modern technology-based. If we compare the three options, the largest number of benefits are visible in the customer-centric areas.

Digital transformation in the Government and the public sector organizations is often stuck in a trap. It is because often they invest in digital transformation, but they do not focus on the embedded changes that are needed. Often the governments introduced new technologies, but they did not invest in the organizational skills to manage the technology and thus failed. Another example of this failure is the failed implementation of the ERP systems in the public sector. Digital transformation in the public sector is strongly influenced by the need for a coherent strategy. It is because often the government is too focused on increasing efficiency, rather than working on the strategic part of the initiative to improve the quality of service given to the citizens. (Gerald C. Kane et al Deloitte, 2015)

About digital transformation in the government, the concept of e-government has emerged. E-government is defined as the provision of government services to citizens in a non-traditional manner, through digital means to the citizens. The main areas of focus for the e-government include access to information, personal benefits, facilities, procurement, payment, and citizen participation among others. It is an integrated tool that comprises infrastructure, solutions, and the use of public portals. These services raise the standard of the government services and overall improvement occurs in the public sector. However, it must be remembered that digital transformation means not only developing a website that the public can access. It is more about leveraging the use of digital technology to support a transformation in

the operations and effectiveness of government. (Pardo, 2000) In contrast to the private sector, public sector digital transformation initiatives are slightly different. It is because there are more hierarchies to build and cross when executing a large-scale project like digital transformation. There is more red tape and resistance that can be expected in a government organization as compared to the private sector. It has also been observed that the majority of the time, one single person or department is leading the change in the government agencies while in the private sector, the situation is different. (Fang, 2002)

McKinsey (2016) in its study has also talked about the digital transformation model in government. The governments do not face any competition in terms of improving their efficiencies and do not have the fear that the other governments will outpace them in digitalization. Despite this, the governments have been working on the need to improve digital services to better provide services to citizens. The framework of digital transformation for the Government has been devised as follows: there are two main components of this framework: the core capabilities that the government uses to involve the businesses and the citizens i.e. the tools and the methods used to reach out to the government. This is followed by the second main item, i.e. organizational enablers that support the government in utilizing these tools to the best of their abilities. These include strategy, governance, leadership, talent, culture, and technology. Together these elements make a framework for the government to define its priorities for the digital transformation.

Despite the framework and the opportunities, digital transformation in the public sector also has challenges to face as described by Ndou (2004). These challenges can be divided into a few sections. The first is the element of legislation and policy changes. In the public sector, the changes or new mechanisms must be implemented after much deliberation and effort. It is because digital transformation is a step away from the normal, systems of Government that are based on traditional methods. Moreover, in developing countries, there are not enough laws regarding the security and protection of data and breaches. Therefore, legislation and policy changes take time. One such example is of initiation of an e-procurement system by the Philippines Government. To carry this out, several orders had to be issued to change the legal framework, needed to execute the plan. Apart from this, another major challenge faced by the public sector is related to human resources. Comparatively, it has been found that the staff in the public sector is not well trained to handle the new digital landscape. This leads to issues in managing the new digital infrastructure and often the full benefits are not reaped. There is a misplacement of resources in the public sector, as often too much money is spent on the infrastructure and not on training. One such example of this is China's e-park initiative where the public sector employees were given full training before they could carry on with the project. Change management is another significant challenge that affects the public sector company's digital transformation. Although the change of culture is an issue dominant in both public and private sector firms, the structure of hierarchy in the public sector creates more hurdles. The bureaucratic setup is cumbersome, and employees display resistance while implementing change in the government organization. They already have their assumed and tested methods of doing things and find it too difficult to migrate to new methods. Related to this is the matter of partnership and collaboration. The digital transformation framework needs to be executed with the help of all departments working in coordination. In this case, as well, the traditional structure of the Government organizations makes it difficult for the collaboration to work out. Each department is occupied with its own workings and often not on the same page while executing a digital transformation strategy. Last but not the least, the role of leadership and strategy. As highlighted above, without a clear and sound strategy, it is not possible to succeed in digital transformation in the public sector. Furthermore, the clarity of vision in the case of the public sector is more important than in the private sector. It is because of the objective and the end-user of the public sector organization that the motive is not just to reduce the costs, but also to provide easier services for the welfare of the public.

Another important concept related to the Government moving toward digital transformation is related to the betterment of welfare services and public services as per the OECD report (2016). A digital environment for Government is user-driven and the demands from users shape the Government's strategy of providing integrated services. E-government is a part of the digital transformation process which helps and leads the governments to move toward complete digitalization. The first step towards this is more reliance and adoption of technologies related to digitalization. Here in this step, the focus is to improve the channels through which the services are provided as mentioned earlier as well. The second step in the case of welfare is to identify the administrative services and the digital personal services. Administrative services are those that are critical to the Government including citizens, public security, and safety. The latter includes direct and personalized services. These two components are combined to form a framework for digital transformation in the public sector to improve the welfare of the public. The larger objective is to work on enhancing the overall living standard of the people by making their lives and work easier than before through investment in digital means.

The task of modernizing the public is not new. It has been going on since the 1990s when the idea is to improve the management of public sector firms. The initial idea was based on learning from the private sector firms to apply to the public sector firms to improve the cost savings and efficiency. Patrick, D., Margetts, H. et al, (2010), mentioned the themes that have been established to improve the public sector through the use of IT and digital technology. The first major theme focused on ideas like using digital technology to provide one-stop solutions to the citizens in the form of data consolidation and integration. Furthermore, the other theme that has entered the field of public sector improvement is 100% digitalization. This includes using digital channels to reach the customer, and automated processes in every way to transform the public sector. In relation to this, Oliver (2008) has talked about the challenges of embracing the 100% digital channels for the public sector. Many companies have been trailblazers in the field of digital technology and shattered business models to develop new ones including Facebook, Amazon, and many others. On the other hand, the public sector has the burden and responsibility of not failing as it is serving the people. Therefore, digitization in the public sector must come with the need to balance the risk of failure and the digitalization of the service.

The public sector companies face more trouble in digital transformation with respect to employees and culture. It is because the employees often do not get growth opportunities and are not included in the discussion process of decision-making. Therefore, they are more likely to retaliate when a new change is introduced. Therefore, digital transformation is more challenging to implement in the public sector. Another factor in this regard is the amount of training and effort put on the employees, particularly the IT personnel. This lack of focus on training in the public sector also creates an impediment in the path of digital transformation. A study in the UK public sector was conducted where respondents felt that they do have the IT skills, but do not possess the skills needed to implement digital transformation nor to work on the strategy side to develop long-term plans to execute a change in the organization. Therefore, many respondents feel that they do not believe that technology can be much useful in the future for them if they remain in the public sector.

Despite these issues, the public sector companies have been able to bring about change in the digital sense. They have been most successful in the aviation and the transportation sector, mainly due to the use of data integration. Many companies have realized how the data can be integrated to serve the citizens and developing some technology around that. One more example of the public sector is the energy sector where the public sector is mostly present. Traditionally, these services are provided by the public sector and technically face no competition. However, now many consumers are exploring alternative methods of electricity consumption which has led to the emphasis on digital transformation in the electricity sector. Therefore, it can be said that digital transformation has broader objectives and goals in the public sector, yet the impediments and challenges are much higher as well due to the reasons mentioned. (Norman, 2018)

The literature review above has outlined that digital transformation is a crucial and difficult task. It requires careful planning of techniques and execution to reach the full potential of digital transformation. There are four crucial steps to achieve and dimensions including structural, financial, technological, and value creation. These dimensions need to be combined and integrated in a practical manner to be successful. Apart from this, there are many companies that have benefitted from higher profits and efficiency after implementing digital transformation. Their profits have soared and have been able to compete well in the market with digital technology. Moreover, both the manufacturing and service companies have adopted these techniques and have attempted to implement digital transformation. The literature related to the public sector has also been reviewed, where we have studied the frameworks used to assess digital transformation in the public sector firms and how effective they are. At the same time, we have identified a gap in the literature review to know real and on-ground facts about digital transformation. There is a gap in the market to study the Saudi Arabia market and companies in the light of digital transformation. We will attempt to study the gaps in the research.

Research Hypotheses

The following are the research hypotheses based on the type of organization.

H_{01}:   There is no significant difference in the management commitment to digital transformation and type of organization.

H_{02}:   There is no significant difference in the financial feasibility and the type of organization.

H_{03}:   There is no significant difference in the HR support and the type of organization.

H_{04}:   There is no significant difference in the technical support and the type of organization.

H$_{05}$:   There is no significant difference in the product development and the type of organization.

H$_{06}$:   There is no significant difference in the market share and the type of organization

H$_{07}$:   There is no significant difference in the service delivery and the type of organization.

H$_{08}$:   There is no significant difference in customer satisfaction and the type of organization.

H$_{09}$:   There is no significant difference in customer support and the type of organization.

H$_{010}$:   There is no significant difference in the benefit to the vendor and the type of organization.

Research Methodology

This research aims to analyze decision maker's commitment to digital transformation, financial feasibility, resistance to change, software compatibility, and challenges. Hypotheses were formulated to analyze the relationship between management commitment to digital transformation, financial feasibility, HR support, technical support, product development, market share, service delivery, customer satisfaction, customer support, and benefit to vendor and type of organization (Government, semi-Government, Private and Entrepreneurs). Accordingly, a structured questionnaire was designed to collect primary data from the respective respondents. The survey was conducted online and via interviews. 177 respondents in senior positions in different Government, Private sector organizations participated in the survey. Regression, correlation, and tests of hypotheses are conducted to draw meaningful inferences.
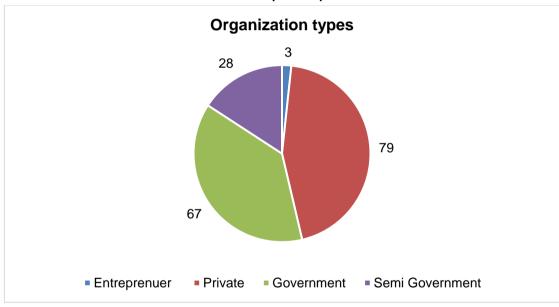
Table 1: Sample Composition

Data Analysis

Regression: Model 1

The first regression model is between COST and DTA. The cost here represents the financial aspects of the digital transformation process including the costs and benefits of undertaking the initiative. The digital transformation awareness represents the management's commitment to launch initiatives and how much they appreciate the need for the process. Here in Model 1, the dependent variable is the DTA and the independent variable is COST. Here the relationship has come out to be positively related in the case of these two variables. It implies that the financial aspects of the initiative impact the level of digital awareness initiatives. This seems valid because financial aspects are the major drivers of these initiatives. The level of commitment of the management is driven by the realization of the financial costs and benefits of the company.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.688[a]	.473	.470	.54185

Predictors: (Constant), COST

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	
		B	Std. Error	Beta		Sig.
1	(Constant)	.551	.122		4.509	.000
	COST	.744	.059	.688	12.544	.000

Dependent Variable: DTA

Regression: Model 2

Model 2 is based on the variables of HR and DTA. As mentioned above, DTA is the digital transformation awareness that represents the management's commitment to launch initiatives and how much they appreciate the need for the process. On the other hand, HR represents the human resource perspective and the impact on digital transformation awareness. As model 2 shows, there is a positive relationship between the two variables. It implies that if human resource issues persist including resistance and acceptability challenges from employees, then the level of digital transformation levels will be impacted and vice versa. This result has shown that resolving the human resource issues and having them on board is extremely critical for the success of digital transformation projects. The management needs to include them in the process to be able to execute it with perfection.

Table 4 : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	.342	.60393

Predictors: (Constant), HR

Table 5 : Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.657	.147		4.480	.000
	HR	.492	.051	.588	9.620	.000

Dependent Variable: DTA

Correlations

The table below is a summary of the correlation of the variables used in the research. There are four main variables to be used namely: Digital transformation awareness, Cost, Human resources, and technological perspective. The highest level of correlation can be found between DTA and COST while the lowest is between the COST and TECH.

Table 6: Correlations

		DTA	COST	HR	TECH
DTA	Pearson Correlation	1	.688[**]	.588[**]	.576[**]
	Sig. (2-tailed)		.000	.000	.000
	N	177	177	177	177
COST	Pearson Correlation	.688[**]	1	.574[**]	.481[**]
	Sig. (2-tailed)	.000		.000	.000
	N	177	177	177	177
HR	Pearson Correlation	.588[**]	.574[**]	1	.641[**]
	Sig. (2-tailed)	.000	.000		.000
	N	177	177	177	177
TECH	Pearson Correlation	.576[**]	.481[**]	.641[**]	1
	Sig. (2-tailed)	.000	.000	.000	
	N	177	177	177	177

**. Correlation is significant at the 0.01 level (2-tailed).

Hypotheses Testing

Based on the data collected, we ran tests statistically to check if the hypotheses hold true or not. In this heading, we have conducted a cross-sectional analysis based on the type of organization namely Government and Private Companies. We have used the independent samples test on the variables identified to test our hypotheses. We have summarized the results in the table below.

Table 7: Hypotheses Testing

Hypothesis #	Results	Hypothesis Status
Ho1: There is no significant difference in the management commitment on digital transformation and type of organization.	**t stat= 2.037** **t critical= 1.960**	**t stat > t critical** **Rejected**
Ho2: There is no significant difference in the financial feasibility and the type of organization.	**t stat= 2.318** **t critical= 1.960**	**t stat > t critical** **Rejected**
H$_0$3: There is no significant difference in the HR support and the type of organization.	**t-stat= 1.884** **t critical=1.960**	**t stat < t critical** **Failed to reject**
H$_0$4: There is no significant difference in the technical support and the type of organization.	**t stat= 1.505** **t critical=1.960**	**t stat < t critical** **Failed to reject**
H$_0$5: There is no significant difference in the product development and the type of organization.	**t stat= 1.757** **t critical= 1.960**	**t stat < t critical** **Failed to reject**
H$_0$6: There is no significant difference in the market share and the type of organization.	**t stat= 2.11** **t critical= 1.960**	**t stat > t critical** **Rejected**
H$_0$7: There is no significant difference in the service delivery and the type of organization.	**t stat= 1.366** **t critical= 1.960**	**t stat < t critical** **Failed to reject**
H$_0$8: There is no significant difference in the customer satisfaction and the type of organization.	**t stat= 2.223** **t critical= 1.960**	**t stat > t critical** **Rejected**
H$_0$9: There is no significant difference in the customer support and the type of organization.	**t stat= 1.849** **t critical= 1.960**	**t stat < t critical** **Failed to reject**
H$_0$10: There is no significant difference in the benefit to vendor and the type of organization.	**t stat= 1.035** **t critical= 1.960**	**t stat < t critical** **Failed to reject**

Discussion of Results

The regression (Model 1) between cost and digital transformation awareness (DTA) implied that the financial aspects of the initiative impact the level of digital awareness initiatives. This seems pertinent because the financial aspects are the major drivers of these initiatives and the level of commitment of the management is driven by the realization of the financial costs and benefits of the organization. The regression (Model 2) based on the variables of HR and DTA, shows, that there is a positive relationship between the two variables. It implies that the level of digital transformation is impacted by resistance to change and acceptability challenges from employees and vice versa. Correlation analysis for the variables digital transformation awareness, cost, human resource, and technological perspective indicated the highest level of correlation between DTA and cost while the lowest is between the cost and technology. The results further indicate that there are differences in perceptions in the public and private sector organizations with reference to management awareness, employee resistance, market share, and customer satisfaction.

Cross-Sectional Hypotheses Testing and Inferences

The results show that as per the type of organization, there is no significant difference in HR support and type of organization and the same is the case for technical support. This implies that issues with employees and the role of employees in digital transformation and technical support are not dependent on the type of organization. Both government and private companies face difficulties while dealing with change management and employees. At the same, we can infer that both the types of companies are spending and building IT infrastructure through the private sector seem to fare better. The analysis findings have also indicated that in the earlier part of the report that these issues are found. Other than that, there are other areas where we have identified that there are no significant differences based on the organization including customer satisfaction, product development, service delivery, vendor satisfaction, and customer support. The mean score for these factors for private and government organizations is not significantly different. We can infer from this that in these areas digital transformation is standing at a similar place in terms of digital transformation. At the same time, we can infer that for the cases of digital transformation awareness in management, cost measures, market share, and customer satisfaction, there are differences between the two groups. This means that based on the results, the private sector has been better at leveraging the benefits of digital transformation, and the public sector firms can learn from them.

Conclusion

The report is based on digital transformation in Saudi Arabia's public and private sector firms. Digital transformation is one of the leading factors affecting companies globally and is the need of the day. In the light of Saudi Vision 2030, Saudi Arabia has launched a drive to move towards innovation, data analytics, artificial intelligence, and other factors to make the economy more efficient and prosperous. The literature review covered that there are four main dimensions of digital transformation including HR, finance, technical, and management. It shed light on the numerous benefits to companies to move towards digitalization in the forms of new products, markets, higher customer satisfaction, profits, and growth. Also, there are many companies that now stand as examples and guidance for implementing digitalization. In the latter part of the research, a survey was conducted among the working employees in different organizations along the four main dimensions of digital transformation. After applying the statistical tests and summarizing the results, certain inferences have been made. The analysis was conducted to understand how the private and public sectors differ in their approach to implementing digital transformation. In terms of employee and technical factors, there are no significant differences. However, in terms of cost and digital transformation awareness, there are significant differences. Factors like market share and customer satisfaction are also found to be different in terms of the public and private sectors. The regression and correlation test results also indicated that the four main variables of digital transformation discussed above have a strong link with each other. Therefore, these relationships must be used in practical life to maximize the impact of the efforts to promote digital transformation. For example: working on employee concerns will have an impact on management's commitment to digital transformation. From these results, we have been able to draft suggestions for policymaking to further promote digital transformation and make it easier for the companies. The impact of society has been emphasized to encourage others through our research to move towards making efforts to highlight the importance of digital transformation.

References

1. Fujitsu Limited, (2017), [Online], Digital Transformation Delivering Business Outcomes, Available at: http://www.fujitsu.com/downloads/GLOBAL/vision/2017/download-center/FTSV2017_Survey_Finance_report_EN-1.pdf
2. Columbus, L. (2018), The State Of Digital Business Transformation, [Online], Available at: https://www.forbes.com/sites/louiscolumbus/2018/04/22/the-state-of-digital-business-transformation-2018/#29d6d49d5883
3. Hanware, K. (2016), [Online], Digital transformation remains Vision 2030's core strategy, Available at: http://www.arabnews.com/node/999821/business-economy
4. Pardo, T. (2000). Realizing the Promise of Digital Government: It's More than Building a Web Site, Center for Technology in Government
5. Fang, Z. E-Government in Digital Era: Concept, Practice, and Development, International Journal of The Computer, The Internet and Management, Vol. 10, No.2, 2002, pp. 1-22
6. McKinsey, (2016), Digital Middle East: Transforming the region into a leading digital economy
7. Ndou, V. (2004), E- Government for Developing Countries, Challenges and Opportunities, EJISDC (2004) 18, 1(1)
8. OECD report (2016), Digital Government Strategies for Transforming Public Services in the Welfare Areas
9. Oliver, L. (2008), [Online], Telegraph selects Google Apps for its journalists. Available at://www.journalism.co.uk/news/telegraph-selects-google-apps-for-its-journalists-/s2/a531935/ (accessed June 6, 2011).
10. Norman, J. (2016), The Great Skills Exodus: Why the IT talent is decreasing in public sector? EMC Square.
11. Michael Fitzgerald, Nina Kruschwitz et. Al. Embracing Digital Technology-A New Strategic Imperative, MIT Sloan Management Review, October 07, 2013.
12. Gerald C. Kane, Doug Palmer, et al. Strategy, Not Technology Drives Digital Transformation, Delloitte 2015.
13. Patrick, D., Margetts, H. et al, (2010), Government IT performance and the power of the IT industry: A cross-national analysis: Washington, DC: American Political Science Association.

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