Implementing successful e-government initiatives in Saudi Arabia: Exploring the adaptation strategies of middle managers in the public sector

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ARTICLE INFO

ABSTRACT

Over the last several decades, there has been considerable research conducted on the adoption and technology acceptance of new information systems by users. However, most of this research had focused mainly on the impact on citizens in a bid to measure improvements in the quality and speed of the services provided. Therefore, the purpose of this paper is to develop an understanding of internal users' reactions to new information systems and, in particular, new e-government practices. Briefly, this research study draws on the Coping Model of User Adaption "CMUA" in order to make a qualitative examination of the adaptation strategies of middle managers in public bodies when new e-government initiatives are implemented in their workplace, and unlike previous studies, this work focuses particularly on Saudi Arabia. There were nine semi-structured interviews conducted with two public bodies with each interview analyzed separately (individual level), then within-case analysis for each case study (group level). The findings revealed a strong relationship between the adaptation strategies and the success (or otherwise) of the adoption of the new e-government systems in all of the cases. The study also contributes to theory as there were several new outcomes discovered that can be added to improve the original CMUA framework.

1. Introduction

The term "E-government initiative" is usually defined either from a practitioner's perspective or a scholarly one. The Pacific Council on International Policy (PCIP) refers to it as "the use of ICTs (Information and Communication Technology) to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens" (PCIP, 2002). Whereas scholars consider "E-government as public organizations' use of modern ICTs, especially Internet and Web technology, to support or redefine the existing and/or future (information,

communication, and transaction) relations with stakeholders in their internal and external environment" (Bekkers and Homburg, 2007).

For this study, the term E-government is defined by combining these two perspectives: Practitioners and scholars. In so doing, we can define E-government initiative as follows: The use of ICT by government and public administrators to provide and deliver efficient services to a number of stakeholders, including citizens, businesses, employees, and public organizations, by allowing them to interact with the government through electronic channels.

There has been an increasing level of interest in the topic of E-government over the past decade. Numerous studies have stressed the need to further study E-government from different perspectives, in different contexts, and using different methodologies compared to Aichholzer (2004), Åkesson et al. (2008), Angelopoulos et al. (2010), Dadashzadeh (2010), Pina et al. (2010), and Joseph (2013).

Moreover, the rapid development in information and communications technology has encouraged the

public sector to think seriously about implementing E-government initiatives (Ho, 2002). Therefore, we believe that it is important to study internal users' adaptation strategies as these strategies tend to impact the potential benefits provided by the new electronic services. This implementation will lead to a radical change inside organizations, such as new policies, processes, structures, and the introduction of new IT applications that employees in the organization must use (Sykes et al., 2014). In other words, the way in which internal stakeholders are used to performing their jobs will change completely. As a fairly new initiative, E-government as a system is complex and requires radically more IT changes than have previously been experienced in the public sector (Irani et al., 2009). Employees often find such organizational change and using new information systems to be extremely challenging (Sykes et al., 2014).

Thus, the importance of this study lies in helping those at the top management level in public sector departments proactively manage IT-induced changes even before an IT event occurs. It also provides a framework that can help understand the mechanism of internal user adaptation and better predict users' reactions. Furthermore, this study is intended to help top managers encourage internal system users, particularly middle managers, to avoid negative behaviors and hence, manage said middle managers more efficiently. This study would be helpful for the Saudi Arabian government who announced a new reform program for the whole country called Visions 2030. One of the goals of Vision 2030 is to offer high-standard electronic government services that meet the needs of the people who live in its land, including Saudi and non-Saudi citizens. This would require a radical change in the public sector brought about by the information technology and the reengineering of most processes. Studying the adaptation strategies of the Saudi public employees when they face such radical changes can be useful for top management. It would help in examining reasons for early resistance and providing the right tools and guides for those employees which would increase the level of success of the new technology implementation.

The research objective for this study is to explore the adaptation strategies of public sector middle managers faced with an IT event and analyze the impact of these strategies on the success of information systems (IS) implementation in the public sector.

2. Literature review

This section will offer a comprehensive review and analysis of prior studies in the literature regarding E-government initiative implementation, and also provide the CMUA model.

2.1. E-government advantages

As per the general consensus in the literature, the main benefits of E-government include accountability (PCIP, 2002; Bekkers and Homburg, 2007); efficiency (PCIP, 2002; Carter and Bélanger, 2005; Bekkers and Homburg, 2007); transparency (Ndou, 2004); interaction (Bekkers and Homburg, 2007); and cost reduction (Ndou, 2004). Other benefits of implementing E-government initiatives for different stakeholders, such as improving operations, minimizing costs, reducing the time of public services delivery, and enhancing administrative procedures are mentioned by West (2004) and Guo (2010). Moreover, Ndou (2004) agreed with West (2004) and Guo (2010) with regard to the advantages discussed in their studies and adds other benefits that can be enjoyed from E-government initiatives, such as:

- Efficiency gains and cost reduction
- Quality of service delivery to stakeholders
- Transparency and accountability
- Improving the quality of decision making
- Interaction with stakeholders
- Increasing the capacity of government.

Despite the many benefits offered by E-government initiatives, its success is dependent upon users' (e.g., citizens, employees, and other stakeholders) willingness to accept, implement, and utilize such innovations (Ebrahim and Irani, 2005). The adoption of E-government remains complicated, takes a lot of time, and requires much effort to put information and services online (*Ibid*). It remains unclear how long it will take to gain the full advantages of implementing E-government initiatives. Moreover, the potential benefits to be gained by using E-government services are reliant on the context: the unique issues and challenges faced by each country (Heeks, 2003). The section below briefly discusses the importance of ICT in the public sector and its role in E-government.

2.2. Information and communication technology (ICT) and e-government initiatives

ICT/E-government initiatives aim to provide access to government information to all stakeholders (for example, citizens, businesses, employees, and other governments) anytime and anywhere using several ICT tools, such as the internet and email, which has led to an increase in communication. Moreover, the tremendous improvements in the private sector in using ICT and providing efficient services by saving time and cost for its customers (Cordelia, 2006), have increased people's expectations of services that are delivered by the government through ICT (Bekkers, 2003). For instance, one of the functions offered by ICT is performing online transactions that saves stakeholders the effort of completing paper applications and time previously spent commuting to government offices. Therefore, the utilization of ICT within the public sector is widely known as a key aspect of E-government initiatives (West, 2004;

Yildiz, 2007). The next section presents a discussion of the key barriers to E-governments.

2.3. The difficulties and barriers to implementing e-government initiatives

Despite the many benefits provided by E-government initiatives to society and stakeholders, there are still some challenges that remain. There are a number of barriers that governments face when implementing E-government according to Altameem et al. (2006), who classified them into three categories: Political, technical, and organizational. Whereas, Weerakkody et al. (2011) examined barriers to E-government initiative implementation and diffusion and divided them into four categories: Political, organizational, social, and technological. Therefore, there are various barriers that can delay the progress of E-government initiative implementation and/or drive it to be unsuccessful. However, factors that are related to human beings are considered a crucial barrier to E-government initiative implementation. A study by Dada (2006) on E-government initiative failure indicated that neglecting human factors when designing a new system leads to negative results. Doherty et al. (2003) and Wood-Harper and Wood (2005) also asserted in their respective studies that human barriers are considered important and will be increasingly critical in terms of the successful implementation of information systems in the future.

Information technology is simply a tool and differences are made by those employees who can use and understand its benefits. For example, Foley and Alfonso (2009) state that, along with technology,

paying attention to organizational barriers is important and will increase the level of success of transforming public services being provided electronically. Top management support is considered a vital factor that can have a positive impact on the implementation of E-government initiatives throughout the implementation process (Ke and Wei, 2004; Altameem et al., 2006; Fernandez and Rainey, 2006; Dwivedi et al., 2012). A study by Thong et al. (2000) found that top management support is an important factor in the successful implementation of E-government. Heeks (2003) also asserted that support from senior management can decrease the rate of failure. Furthermore, knowing the benefits and goals of implementing E-government on the part of top management will increase the level of success and avoid some of the failure issues (Weerakkody et al., 2009).

Indeed, all of the human barriers (which incorporate all the barriers categories) that influence the outcome of E-government implementation do have an impact on middle managers. For example, top management support was found positive impact on middle managers (Lewis et al., 2003) by encouraging them to share knowledge about the benefit that new E-government initiatives can provide. Middle managers can be the link between the highest level of an organization's management and the operations-level staff (Pinsonneault and Kraemer, 1993).

2.4. The coping model of user adaptation
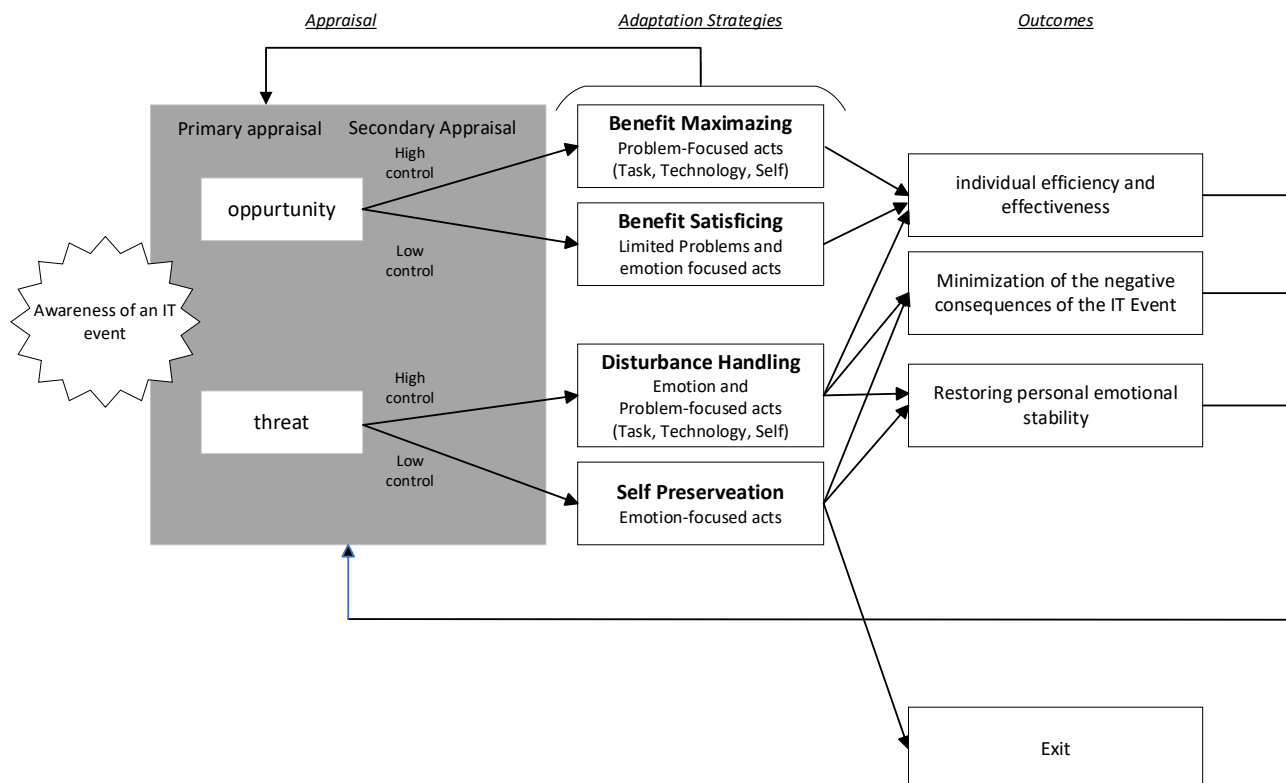
Fig. 1 shows a coping model of user adaptation "CMUA."

Fig. 1: Coping model of user adaptation "CMUA" (Beaudry and Pinsonneault, 2005)

3. Research methodology

This research focused on middle managers in specific organizations in the public sector to explore and understand the current impact of E-government implementation on federal employees. To investigate the phenomenon in-depth, the researcher used a qualitative research approach. When exploring areas in which existing knowledge is limited, conducting a case study method would be the most appropriate way compared with the other research methods (Marshall et al., 2021). Thus so, the case study method was selected as the most appropriate research method for the purpose of this study.

3.1. Sampling strategy

There were three main reasons the researchers chose to conduct the study within the public sector in the Kingdom of Saudi Arabia: The transformation of service delivery in Saudi Arabia, particularly public services from paper-based services to electronic; the degree of accessibility to different organizations to conduct the interviews needed for this study; and lastly, the need to focus on human aspects: employees' issues, and how they cope with and adapt to new electronic systems, which would improve the level of success of e-initiatives in the public sector.

The research objectives of this study were intended to shed light on the issue of middle managers' adaptation strategies when they face new IT events in order to help increase the level of success of the e-initiatives in Saudi Arabia. Moreover, these impacts thus far had not been studied.

3.2. Selected cases

Since this study is qualitative and these kinds of studies usually focus on small samples (Patton, 2001), a purposeful sampling strategy was used in this research. Using purposeful sampling, the researchers selected the two organizations for the following reasons: Recently implemented E-government initiatives, and middle managers who were interested in partaking in the proposed study; this was to ensure a high degree of accessibility to the data as needed.

3.3. Data gathering techniques

The aim of conducting interviews was to understand the experience of the middle managers after the implementation of a new online system in their workplace, and what they had done to adapt to the situation. Thus, the main source of data gathered for this study was through interviews (particularly semi-structured interviews), and the other was reviewing some of the organizations' documents to compare the middle managers' duties and performance before and after implementing new electronic systems. The interview questions were guided by the CMUA (Beaudry and Pinsonneault, 2005), and the researchers used this model to guide the study. A semi-structured interview protocol was developed with and tested by a Business Information System Department faculty member at the University College Cork. The researcher conducted nine interviews for the two case studies.

A snowball sampling strategy was used in this study to select the participants. The researchers asked the head of each selected unit to suggest a middle manager be interviewed; the snowball method was then applied. Each participant has been given a unique code to ensure that their names and job positions were kept confidential. All the interviews were conducted face to face, audiotaped, and then transcribed.

Furthermore, the researchers were able to review some documents with the assigned employees to check information about the participants' duties and performance before and after implementing the new electronic system in both case studies. These documents were used in combination with a semi-structured interview to support and supplement the evidence presented.

3.4. Data analysis techniques

In order to maximize the analytical lens (i.e., the CMUA), the researchers needed to examine and analyze adaptation strategies at the individual level, which in this case were the middle managers who faced a new IT event recently implemented in their workplace. Then, the researcher considered the group level (the second level) to examine the interaction between the adaptation strategies of different middle managers and whether these strategies affected the adoption of the new E-government initiatives by the public organizations negatively or positively.

Thematic analysis was adopted in this study and was the first phase of coding. Following the procedure described by Miles et al. (2018), the data gathered from each interview were treated and analyzed separately from the other interviews. The information obtained was then classified into themes already identified before conducting the interviews in relation to the theoretical basis, which in this study is the CMUA (Beaudry and Pinsonneault, 2005). The themes identified are as follows:

- The roles of the middle managers before the CMUA
- The process before the CMUA
- Primary assessment
- Secondary assessment
- Adaptation strategies
- Outcomes
- The roles of the middle managers after the CMUA

After finishing the coding of the interviews and grouping all the codes into themes, the second phase of coding was started. Finer-grained coding was conducted to obtain more insight into the coded

interviews. The NVivo Pro Version 11 software was used in this study for managing qualitative data, and to code the raw data into categories (themes). The data gathered for this study was then analyzed at the group level (within-case analysis). For each theme and dimension previously identified and included in the CMUA, the researcher looked for similarities and differences, then examined the data in various ways to look for trends in the two cases under investigation.

4. Results and within-case analysis

This section will present the study findings from the two qualitative case studies conducted at the Ministry of Commerce and Industry, which contains the Commercial Register Office and the Department of Corporate Services in Saudi Arabia. This section also presents an analysis of the two cases studied in this research. The data for the within-case analysis reveals that there are different reasons for middle managers exhibiting a certain adaptation strategy when faced with a new IT event. There is also a discussion and the implications of the strong relationship between the adaptation strategies followed, and the success or otherwise of the adoption of the new systems in both cases.

4.1. Ministry of commerce and industry-case one

This case study focused on a newly implemented electronic device launched by the Commercial Register's Office which issues the Certificate of Commercial Registration.

4.1.1. Commercial register office case study findings

This section presents the findings of interviews conducted with middle managers at the Commercial Register's Office. Each interview was analyzed separately and classified according to the associated adaptation strategies. The examination of six middle managers proved to be varied and resulted in three different adaptation strategies that are mentioned in the CMUA:

- Benefits maximizing
- Disturbance handling
- Self-preservation

There was no evidence found of the fourth adaptation strategy that is included in the CMUA which is benefits satisficing.

Fig. 2 above maps all the information about the behaviors (as well as reasons for such behaviors) of the middle managers in the Commercial Register Office interviewed. Six middle managers participated in this case study. Three of the middle managers engaged in a benefits maximizing strategy, two of them exhibited a disturbance handling strategy, and just one middle manager engaged in a self-preservation strategy.
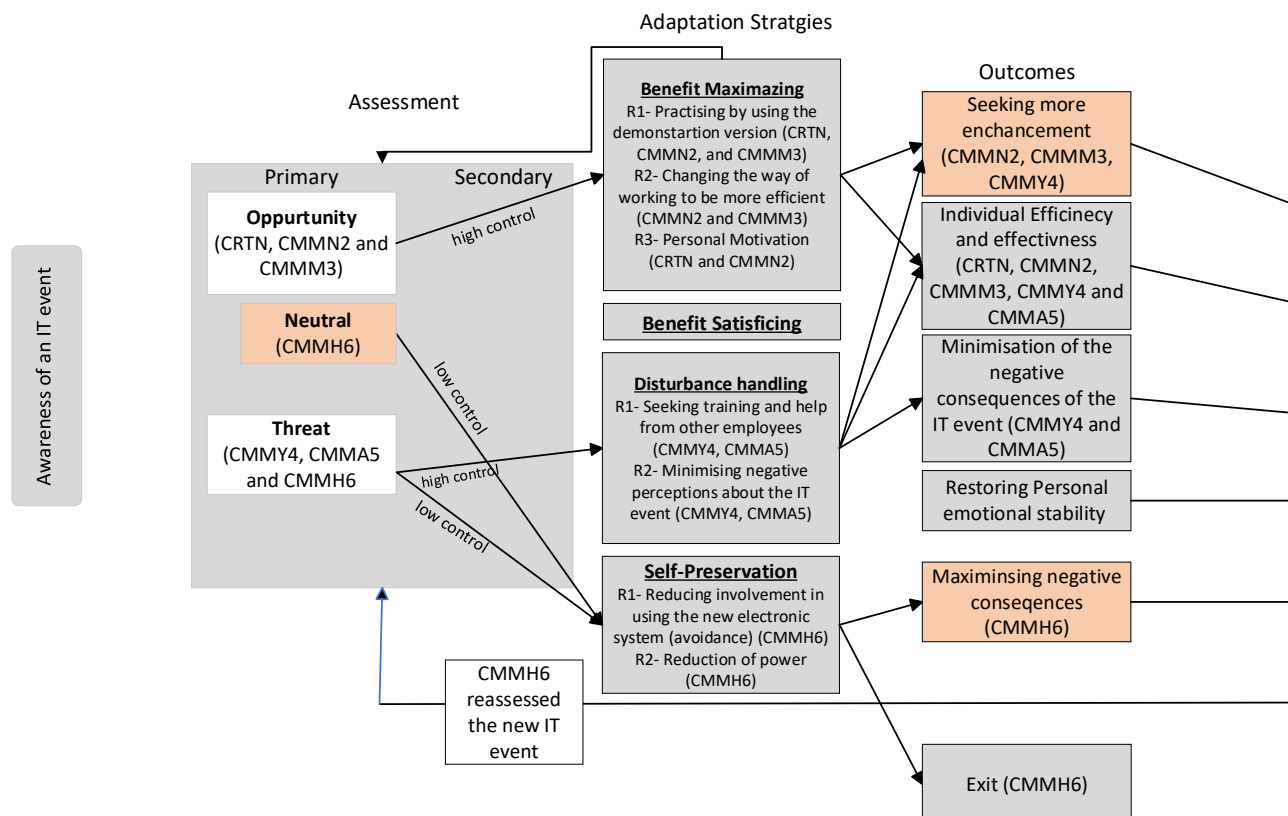

Fig. 2: Findings from the commercial register office

The implementation of the new online system in the Commercial Register Office is deemed to have been successful, as there were more middle managers who engaged in benefits maximizing and

disturbance handling strategies than those who engaged in a self-preservation strategy. As shown in Fig. 2 above, all the middle managers who exhibited benefit maximizing were able to increase their performance, as well as those who exhibited a disturbance handling strategy. This situation is reflected overall in the level of success of the new system implementation. These strategies are all based on initial and secondary assessments of the IT event, which in this case was the implementation of a new online system to issue Commercial Registration Certificates. Outcomes have been presented in this case study for each of the middle managers based on the strategies they used to adapt to the new electronic system.

4.1.2. Discussion

Based on the data analysis presented in this case, it is evident that the CMUA has a deficit and needs to be extended to cover shortcomings, particularly when applying the model to study newly implemented E-government applications. It is also evident that the shift of power was a key driver that impacted the adaptation strategy mechanism. There is evidence that links the positive adaptation strategies of middle managers to positive results in the implementation of a new online system. The middle managers were directed first by their primary and secondary assessments, and then by their serious efforts to be engaged with the adaptation strategies which would then affect the overall success of the new electronic system.

With regards to the primary and secondary assessments, our findings depicted that at the beginning, three of the five middle managers, in this case, felt that the new system would be a positive opportunity for them, while the other two middle managers saw it as a threat. Surprisingly, one of the middle managers saw the new electronic system as neutral at the beginning (when the new system was just an idea). However, this participant later regarded the new electronic system as a threat (i.e., at the point when this middle manager realized that the new electronic system was going to be a reality). It seems that all the middle managers, particularly those who had a high degree of control over the situation (i.e., task, self, technology, etc.), and even those who saw the new electronic system as a threat, were able to cope positively and to increase their performance. Not just that, they even asked for more enhancement of the new system so that they could stop serving clients face to face (for some cases), even if the new system became more complex.

In relation to adaptation strategies, each strategy consists of a set of reasons that are considered to be the core components of that particular strategy. These reasons are different from one adaptation strategy to another and determine which adaptation strategies the middle managers would engage in. In this case, the data revealed that two reasons seem to be behind the overall positive impact of adapting to the new electronic system successfully which are (i)

using a demonstration version to practice the new system, and (ii) seeking training and help from colleagues. Organizations and those at the top management level should consider these reasons to increase the overall level of success of the implementation of a new electronic system. There was no evidence found relating to one of the adaptation strategies mentioned in the CMUA: A benefits satisfying strategy. The data showed that none of the interviewees felt that the new system was an opportunity and had low control over the situation, which leads to a benefits satisfying strategy.

4.1.3. Implications

This case study makes several contributions to theory. Three new outcomes have been discovered that might be added to the original framework. First, there is a new primary assessment discovered in this case study: Neutral. This is an unusual primary assessment that emerged in this case study. There is evidence that when employees in the study assessed the new electronic system as neutral and the secondary assessment may have resulted in a negative evaluation (particularly the employees who felt like they had lost power and used to enjoy working using the old method). Thus, those perceptions appear to have led to passive emotions and outcomes and whereby, these employees began to be considerably harder to be managed effectively. Consequently, top management should acknowledge that such behavior may exist and discover new strategies to help employees to adapt to it all the while not underestimating the possible damage that may have incurred from employees who complain a lot about a new electronic system.

The second outcome identified was asking for more IT enhancement. Most of the middle managers in this case study were positively impacted by the new IT event, which in this case was the introduction of online Commercial Register services. This positive impact occurred due to some of the middle managers considering the new system as an opportunity and being willing to learn as much as they could about it. Although there were other middle managers that saw the new online system as a threat, they were very successful in reappraising their feelings and further increasing their efficiency and effectiveness. Our findings portrayed that all of these middle managers (who exhibited benefits maximizing and disturbance handling strategies) asked for more improvement, which was identified as an exceptional outcome that does not currently exist in the CMUA.

With regards to the third outcome, the data also displayed how the reduction of power that some employees had been enjoying under the old way of working may increase the level of IT resistance and may result in a new outcome that could be added to the original framework: maximizing negative consequences. As mentioned earlier, when participants assessed the new IT event as neutral and the secondary assessment resulted in a negative

appraisal (particularly for employees who lost some power and had enjoyed working using the old method), those perceptions led to passive emotions, such as those employees becoming much harder to deal with. It should be taken into consideration that the reduction of power that middle managers may feel because of the new electronic system, can be harmful to the implementation processes since a high level of resistance may hinder the project's success.

Finally, the data from this case study also discovered that the high level of acceptance and satisfaction with the new system among middle managers contributed significantly to its successful implementation. One participant noted: "Now it's much better, easy work and fewer errors. It used to be so busy before the system was launched, it was so exhausting even though the number of applications is greater than before."

4.2. Ministry of commerce and industry-case two

This case is also situated in the Ministry of Commerce and Industry in Saudi Arabia, in the Department of Corporate Services. This department provides an electronic service that was launched in December 2014 and the service under scrutiny in

this case study is the establishment of new companies.

4.2.1. Department of corporate services case study findings

The data analysis of the three middle managers uncovered two adaptation strategies: (i) benefits maximizing, and (ii) disturbance handling.

Fig. 3 depicts the entire case study findings for each of the participating middle managers in the Department of Corporate Services. There were three middle managers who participated in this case study: Two engaged in benefits maximizing and the other exhibited a disturbance handling strategy.

The middle column also portrays the reasons that led them to use certain adaptation strategies. The outcomes associated with each adaptation strategy are presented on the right of Fig. 3. As per Fig. 3 above, all three middle managers were able to increase their performance, which reflected positively on the level of success of the newly implemented system. Thus, a successful implementation may also be due to the eagerness and willingness to use the new system shown by the three middle managers once it was introduced to them.
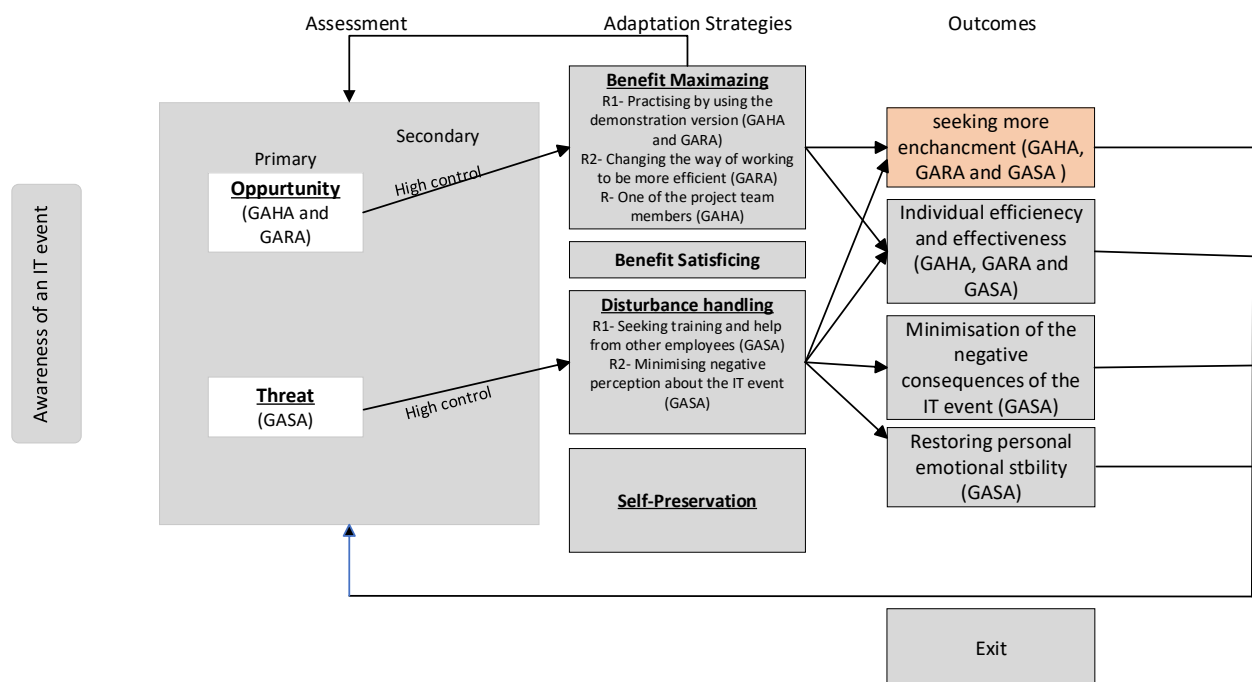

Fig. 3: Findings from the department of corporate services

4.2.2. Discussion

The data revealed that there was a strong interrelationship between the positive adoption of a new IT system in the public sector and the adaptation strategies followed by the middle managers. In this case study, the data detected a need to analyze the situation before and after the implementation of the new electronic system, particularly within the roles of the middle managers and the processes that the service offered. All the

participants, in this case, agreed that the processes were now much easier than before. The roles of the middle managers were also viewed as being better than before.

The data analysis reveals that the solid modern education base they received was one of the reasons that led them to interact positively with the newly implemented system. Another reason for the managers' ability to adapt positively to the new system was their enthusiasm and willingness to change the way they worked for the better. Thereby,

the high degree of acceptance of the new IT event from all the participants seemed to have a positive impact on the overall success of this case study.

As per the qualitative analysis, there were two participants who were trying to obtain the most benefits (a benefits maximizing strategy) from this new online system implemented in their workplace. As per the data interpretation from before the CMUA, both middle managers were very experienced in using technology tools and keen to learn the new system as quickly as they could, as they were driven by the belief that using this technology would ease their workload. The researcher relates the positive assessments to the more modern education they had received in comparison with the other middle managers. Moreover, the strategy the two middle managers used to adapt to the new electronic system allowed them to increase their performance. In fact, they both also asked for more enhancement of the new electronic system, which is deemed to be a new outcome that could be added to the CMUA.

On the other hand, there was only one middle manager who engaged in a disturbance handling strategy. As per the primary and secondary assessments, this participant evaluated the new system as a threat. There are two reasons that can be attributed to this: His lack of experience in using technology in the workplace, and, unlike the other middle managers who participated in this case study, who were younger than him, he had not received a modern education. Thereby, the researchers observed that age can play an important role when it comes to the use of adapting to new technology. However, the participant (code: GASA) was very enthusiastic to learn the new electronic system and was confident that his abilities would enable him to do so (according to the secondary assessment). With regards to the adaptation strategy, there were two main reasons that led GASA to be engaged in disturbance handling, as illustrated in Fig. 3. GASA was very self-motivated in minimizing the negative consequences of the new electronic system, since he believed that technology is an important element to have in the workplace. Meanwhile, the data analysis revealed that there is a strong relationship between a lack of experience in using technology and older employees. Seeking out training was one of the approaches to covering the shortcomings in his ability to learn the new electronic system and led GASA to use a disturbance handling strategy.

Therefore, with regards to outcomes, GASA was able to minimize the perceived threat of the new system and restore his feeling of stability. His adaptation efforts also helped him to increase his performance, and even ask for more development of the new technology, as was the case with the two middle managers who exhibited a benefits maximizing strategy.

4.2.3. Implications

As per the data, there was a strong interrelationship between the positive adoption of a new IT system in the public sector and the adaptation strategies followed by the middle managers. Accordingly, there were three reasons why two of the middle managers (code names: GAHA and GARA) used a benefits maximizing strategy. One of these reasons, which should be taken into consideration by top management in organizations, is the provision of a demonstration version of the new electronic system in order to maximize the potential benefit of the new system. There were also two reasons that led the other middle manager (GASA) to exhibit a disturbance handling strategy. Practitioners should pay a great deal of attention to encouraging employees (the users of the system) to share their knowledge of a new electronic system, and help each other gain positive outcomes. There was no evidence of the two other adaptation strategies (i.e., benefits satisfying and self-preservation) in the framework of this case study.

The qualitative analysis of interviews of the three middle managers in the Department of Corporate Services revealed that the CMUA needs to be updated and expanded to consider and include additional elements of the outcomes of adaptation strategies. Moreover, this is especially pertinent when it comes to brand new E-government services being implemented in the public sector. There was one new finding that emerged from this case study, particularly in the outcomes that resulted from the data analysis of this case study. While the first one already exists in the CMUA model (increased efficiency and effectiveness), the second outcome has not been previously identified or presented in the CUMA: Seeking more IT enhancement. In fact, all the middle managers, in this case, asked for more enhancement, even if this made the newly implemented system more complex. This was because they wanted the work to be easier for them, particularly if the enhancement to the new electronic system encouraged clients to stop visiting the department face to face. Overall, those at the top management level, organizations, and designers could benefit from this case by focusing their efforts on improving the work environment. Our recommendation would be to start by designing a new electronic system that also covers all types of various cases that clients may not be able to complete by themselves online. Thus, this would help eliminate the need to meet employees face to face to be served manually and in person. The high acceptance of the new system among the participants in the department would lead to the successful implementation of the system.

5. Conclusion

This research study has provided empirical validation for the usefulness of the Beaudry and Pinsonnault (2005) framework as an analytical lens to simply and accurately capture the adaptation strategies used by middle managers in the public sector who face a new IT event in their workplace (in this study, the new IT events were E-government

initiatives). The framework is also useful for examining how various adaptation strategies affect middle managers' outcomes, as these can impact overall the success of electronic system implementation.

To contribute to theory, this research used a framework that has never been applied before in the context of E-government. This research study applied the CMUA to 9 middle managers in the public sector who faced new E-government initiatives (new IT events), while the original framework was applied to just six account managers in North American Bank.

The researcher has taken the framework well beyond what it was designed for. The model was designed only to examine individuals' adaptation strategies (i.e., working at the individual level). In this study, the researcher applied the framework to assess the impact of adaptation strategies on the overall success of new systems implemented recently in the public sector, particularly E-government initiatives, by analyzing at the group level. The data demonstrates that the more positive adaptation strategies exhibited by middle managers reflected positively on the overall success of the e-initiatives.

This research study contributes to theory by analyzing the situation before the primary assessment stage in the framework, which illuminated some of the factors that affect the primary assessment positively or negatively, which in turn affect the overall outcomes of the adaptation strategies.

Critically, this research has expanded the CMUA framework created by Beaudry and Pinsonneault (2005) to examine the adaptation strategies of employees faced with a new disruptive IT event in their workplace. The aggregate data analyzed from the two cases suggest that there are three new elements that could be added to the CMUA that may help us to develop our understanding of the mechanisms behind the coping strategies used by middle managers at various times, including: (i) from the time they hear about a new system, (ii) during the implementation process and, (iii) after it has been deployed. These elements need further research to be tested and verified.

- A new primary assessment that lies between opportunity and threat is in the first column of the framework. This new primary assessment is described in this research as neutral. It can be hypothesized that there are other relationships between the new primary assessment (i.e. neutral) and the other adaptation strategies (i.e. benefit maximizing, benefit satisficing, and disturbance handling). These adaptation strategies were not found in this study; consequently, there is a need for more research to be carried out to explore the theoretical possibilities here.
- Seeking more enhancement is a new outcome that can be added to the framework. Most of the participants who asked for more development of a new electronic system wanted more automation to the system for two reasons: (i) to reduce the number of clients who went to the organization's building to be served in person, and (ii) to organize their time so that they could address the other tasks they are required to do.
- Another new outcome that emerged from the analysis of the data is described in this research study as maximizing negative consequences.

The new findings of this research study could be applicable to different contexts to widen the understanding of IT user adaptation behaviors. Furthermore, this research study also contributes to theory by providing empirical knowledge to understand users' responses to new IT events recently implemented in their organizations, particularly in a culture that has never been studied before (i.e., Saudi Arabia). With regards to future research in this area, the researchers will test more cases in different departments with different environments. Thereafter, they may consider the group level analysis to examine the interaction between the adaptation strategies of different middle managers and whether or not these strategies affected the adoption of the new e-government initiatives by the public organizations negatively or positively. The researchers could then conduct a cross-case analysis in order to provide advice to those in top management.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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