

## The Influence of Trust, Security and Reliability of Multimedia Payment on the Adoption of EPS in Libya

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Article Info	Abstract
<p><b>Article History</b></p> <p>Received: October 25, 2020</p> <p>Accepted: December 01, 2020</p> <hr/> <p><b>Keywords</b> E-Payment System; Technical Factors; Grounded Theory; Telecommunications Sector; Online Transactions;Libyan Payment System</p> <p><b>DOI:</b> 10.5281/zenodo.4312133</p>	<p><i>Despite the vital contribution of the growth EPS globally in economic, Libya intervals clearly behind most developing countries in MENA. This paper explored and investigated a number of technical factors effecting the successful adoption of EPS and their impact on each other in Libya. It offers a unique insight into how the organisational and customers perceive the technical factors effecting the adoption of EPS by multimedia. Based on the grounded theory (Straussian approach) and through using semi-structured interview approach, the study indicated that respondents perceived technical factors as the important factors influencing the EPS adoption in Libya by Multimedia Payment. Suggestions and recommendations regarding encouraging were also provided, as well as the use of promotional and media means through multimedia to motivate users to adopt it.</i></p>

### 1. Introduction

In an attempt to achieve the successful adoption of multimediapayment systems (EPS),Badderley(2004) argued that universal acceptability of EPS warranted an investigation into specific technical factors such as security, trustworthiness, reliability, acceptability, ease of use, accessibility and convenience(see also e.g., Basias et al., 2012; Dalvand et al., 2014; Lawrence & Tar, 2010; Sarrab et al., 2013). Developments of payment system such as EPS, e-money within online transaction procedures would help businessesand countries increase their revenues (Briggs & Brooks, 2011; Gholami et al., 2010). Nevertheless, such development is varied from one country to another. For example,the slow-speed of Internet in Libya has affected the adoption of e-banking services, telephone banking and electronic fund transfers (Abukhzam & Lee, 2010; Dewan & Kraemer, 2000; Hunaiti et al., 2009; Salloum, Al-Emran, et al., 2019; Tam, 1998).

When investigating the broader context of North African countries, the parlous provision of EPS is attributed to the economic factors(Feller, 2005; Hunaiti et al., 2009). However, there is a dearth of research into the technical factors affecting the adoption of EPS at organisational and customerlevels in many developing countries including Libya (Dewan & Kraemer, 2000; Noda & Collis, 2001; Pigato, 2001; Tam, 1998; Wresch & Fraser, 2005). Thus, this study is designed to explore a number of technical factors affecting the successful adoption of EPS and their impact amongst Libyan telecommunication sector.

### Literature review

Interestingly, in Libya, Abukhzam and Lee (Abukhzam & Lee, 2010) and Farag (2017) claim that most e-banking fears relate to transaction errors and fraud, with scholars adding that the Libyan banking system is affected by several negative influences such as lack of acceptability, ease of use, accessibility and convenience, all of which act as a barrier to e-banking. Conversely, Hunaiti et al., (Alhumaid et al., 2020; Hunaiti et al., 2009) argue that the absence of a Libyan postal system has played a significant role in online transactions in the Libyan context. Therefore, technical factors will be investigated here in terms of whether this may affect the Libyan telecommunications sector, with a subsequent examination carried out in relation to whether unrest in Libya has influenced the adoption of EPS from a technical standpoint. This section presents the most important technical factors presented in the literature that affect the adoption of EPS. It provides an understanding of the effects of certain technical factors on the adoption of EPS. In so doing, the section commences by providing a number of definitions of EPS and then discusses the relevant issues.

### Definition of EPS

EPS are recognised as an integral tool for online transactions (C. L. Mann, 2000), and it is not surprising, therefore, to find that definitions are often based on the nature of the payments involved. For example, Brazhevich (2001) defined EPS in terms of its payment methods, which facilitates transactions via the Internet at a faster, more efficient and less expensive rate than using credit cards. Yu et al., (2002) claimed that EPS do not necessarily have to involve the use of credit cards, but argued that one of the reasons for its adoption is to develop e-commerce and facilitate payments between businesses, banks, public services, individuals, and the government via electronic telecommunication networks (see e.g., Sumanjeet, 2009).

For the purpose of this paper EPS are defined as 'a process implemented by the payer, whether the payer is a customer or organisation and without interference from any other person through the use of online channels where transactions are performed'. They are several important economic factors affecting the adoption of EPS such as perceived benefit, cooperation with existing entities, Internet cost, etc. (see e.g., Elbasir, 2015). Research has been undertaken to investigate the factors which affect the adoption of EPS from customers' perspective (Kshetri, 2007; Kumaga, 2011; Padachi et al., 2008) and organisations' perspective (Khalfan et al., 2006; Lim et al., 2007; MacGregor & Vrazalic, 2008), however, more research is needed to examine the adoption of EPS from both perspectives in terms of technical factors in Libyan context.

### **Mmultimediafactors**

There are several multimediafactors that can be described (Basias et al., 2012; Dalvand et al., 2014; Lawrence & Tar, 2010; Sarrab et al., 2013) that related to difficulties acquiring the appropriate technologies to meet the EPS adoption requirements. Meanwhile, Lee and Turban (2001) argues that EPS faces a number of different limitations on system quality such as security, trustworthiness of sites, reliability of EPS, acceptability, ease of use, accessibility and convenience. Interestingly, in Libya, some have (Abukhzam & Lee, 2010; Habes et al., 2018, 2019; Jain et al., 2012; Ullah et al., 2013) claimed that most e-banking services fears relate to transaction errors and fraud, with others adding that the Libyan banking system is very young and is affected by several negative factors such as lack of acceptability, ease of use, lack of accessibility and convenience, all of which act as a barrier to run a sufficient e-banking services.

Conversely, Hunaiti et al., (Hunaiti et al., 2009) argue that the absence of a Libyan postal system has played a significant role in all online transactions in the country. Therefore, three main technical factors will be examined in this paper in terms of whether this may affect the Libyan telecommunications sector, with a subsequent examination carried out in relation to whether unrest in Libya can influence the adoption of EPS from a multimedia standpoint. These factors are security, trust, and reliability of EPS.

### **Security**

Security is one of the key concerns for EPS because it is based on the transfer and storage data that can be hacked if it is not securely and safely storage that needs to be taken into high consideration when dealing with electronic or online payments and transactions (Havinga et al., 1996; Mrabet et al., 2018; O'Mahony et al., 2001; Shon & Swatman, 1998).

To tackle this issue several protocols are always developed to address the security issues and EPS by a great player, which includes the use of secure electronic transaction (SET), and Secure Socket Layer (SSL). For example, Worku (1970) highlighted that security issues have to be considered in adopting the EPS in many African countries. In a similar vein, Abukhzam and Lee (Abukhzam & Lee, 2010) indicated that most of their Libyan interviewees pointed out that the majority of Libyan people fear transaction errors and fraudulent problems. As a result, poor security issues also promoted concerns about e-laws and legislation that regulate the EPS, especially that Libya is still under ongoing conflict and civil war which make the situation more worse in terms of security after the major change in its political, economic, social aspect (Ronen, 2016; Ziani et al., 2017).

### **Trust**

The second important element of online concerns is trustworthiness as some consider to have impact on the intention to adopt the EPS (Abukhzam & Lee, 2010; Mrabet et al., 2018; Rose, 2000; Swaminathan et al., 1998). Some have emphasised that individuals assess the medium before they have the intention to use (Kioussis, 2001; Lanford & Hübscher, 2004). The high level of confidence to the user [trust] in the EPS has been identified in the literature as one of the important factors that contribute to successful adoption (Dekleva, 2000; Lanford & Hübscher, 2004; Panurach, 1996; Schwartz, 2001; Yeung et al., 2003). In the investigation of the successful Hong Kong Octopus payment system, Chau and Poon (2003) identified trust in the system, and the supplier as the primary contributor to its success. Brohman and Wong (2004) examined the Octopus system by conducting a survey to the users for identifying the factors that impact upon the use of the smart card. They found that users were keen to use the Octopus system because they viewed it as trustworthy. These two investigations in the system of Octopus linked to identify elements that lead to a successful of EPS. These results are supported by

the user in a survey conducted by Brazhevich (Brazhevich, 2001) who found that users refrained from using the system that was not trustworthy. Kniberg (2002) linked the credibility of the EPS with its adoption and argued that if the system is reliable, trusted and recognised, it would likely be adopted by users and traders.

### **Reliability of EPS**

Reliability is another component of online security concern. This refers to the ability of individuals to imagine EPS can perform the tasks which required as requested without failure (Ayo & Ukpere, 2010; Mrabet et al., 2018). Ho and Ng (1994) in a comparative study between traditional payment systems and EPS suggested that the risk performance of EPS may hinder the adoption of EPS.

According to Amedu (2005) some people doubt the reliability of EPS that is why it affects their consideration to adopt. Pocar (2008) also confirmed that one of the reasons for the lack of adoption of EPS is the availability of the network, which he described eleven transactions in terms of consistency point of sale. It was recorded that not all points of sale transactions are made successfully, which may lead customers to be aware of the lack of reliability (Lee & Turban, 2001).

These three technical factors are seen as an important component when considering the EPS in any country including North African countries. The importance for addressing trust, confidence reliability of EPS as the important factors which support technical effort are necessary to build legal framework in NAC (Kumaga, 2010, p.21). Other related study in Libya such as Hunaiti et al., (Hunaiti et al., 2009) revealed that there were several problems faced the Libyan customers in dealing with EPS such as expensive of broadband connection, instability of postal system and lack of trust in online transaction.

Based on the above, the paper investigates and explores some technical factors (e.g., security, trust and reliability) that affecting the successful adoption of EPS amongst telecommunications sector in Libya in relation to respondents perceive these factors. The main research question is what are the respondents' (organisational and customer) attitudes and perceptions towards the factors effecting the successful adoption of EPS in Libya?

### **Method**

A qualitative method was used in this paper to facilitate a deeper insight into participants' attitudes and perceptions to identify and understand the factors effecting the adoption of EPS in Libya using the Grounded Theory (GT) as its methodology. Although the GT is a qualitative research method developed by Glaser and Strauss (1967) for using in the health sciences, it has been adapted by many information system and social science scholars since early 1990s (Alghizzawi et al., 2019; Allan, 2003; Coleman & O'Connor, 2007; Habes, 2019; Orlikowski, 1993; Urquhart, 2012) due to the fact that it has a commonly held belief to be a dependable method used to investigate socio-organisational phenomena. It remains comparatively novel in this field (Hughes & Jones, 2003), following its introduction by Glaser and Strauss in 1967. GT is also based on the systematic collection and analysis of data (M. Myers & Avison, 2002; Urquhart, 2012), which utilises a set of procedures for establishing the foundations of a theory derived inductively from the phenomenon.

Strauss and Corbin (1990, p.24) define it as a 'qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon'. In this study, the GT method is an appropriate research method for exploring and investigating participants' attitudes and perceptions concerning the adoption of EPS in Libya, for different reasons: it is (1) a useful method for creating a model which identifies the factors effects the adoption of EPS; (2) it allows generating the concepts and categories that help to develop theory; and (3) it provides flexibility for updating interview questions in order to identify new and emergent issues.

The main difference between the GT and other research approaches is its specific development of theory, suggesting a constant interaction between the stages of data collection and analysis of data (M. Myers & Avison, 2002; Urquhart, 2012). Glaser and Strauss (Glaser & Strauss, 1967) suggest that when using GT should approach a research setting without preformed ideas. This means, a long period of time is required to collect the data from the outset and without any theory in mind. However, in some context this might be difficult to achieve. For example, Allan (Allan, 2003) states that there must be an agenda for a research interview held in industrial and commercial organisations, where busy personnel expect to have an agenda for meetings and a researcher is required to clearly identify their topics. It is, therefore, important for the qualitative research to ensure that the participants elicit their opinions about the adoption of EPS rather than recruiting people who may be unable to answer the research questions via its interview.

In addition, two approaches can be highlighted to help examining such phenomenon: Straussian approach and Glaserian approach (Elbasir, 2015; Habes et al., 2020, 2021; Muhaisen et al., 2020) It is appropriated to consider how the Straussian approach might be of use to this research (Charmaz, 2006; Glasser, 1992; Strauss, 1987; Strauss & Corbin, 1990). Importantly, this approach is deemed to be more open to the use of all kinds of literature before a research study is started, while the Glaserian approach requires gathering data from the beginning of the inquiry without any theory in mind. Furthermore, the Glaserian approach follows the

principle that theory emerges from a neutral question, while the Strauss technique utilises a structured question to generate greater force for establishing a theory (Heath & Cowley, 2004).

Interestingly, in relation to subjectivity, it should be anticipated that each person would hold different views and experiences concerning those factors that potentially affect the adoption of EPS in Libya. The basic process of the GT approach is to read and re-read the textual data with the aim of extracting concepts and establishing interrelationships within categories (Heath & Cowley, 2004). Moreover, the ability to understand variables and their relationships would add to the sensitivity of the theory as it is influenced by a number of aspects, including reading from literature and the use of techniques to improve sensitivity (Charmaz, 2006; Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990).

Various techniques are used within Straussian approach to qualitative research such as theoretical sampling, theoretical saturation, constant comparison and memos. All of these are used to understand the problem and cover all the data, including coding of the data and developing the emerging theory (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

### Participants

A pilot study was undertaken and was a necessary step before the acausal empirical study conducted (the interview). Semi-structured interviews were considered to be appropriate data collection method for this research that enabled participants to express their views and perceptions regarding the factors effecting the adoption of EPS in Libya (Allan, 2003; Austin & Sutton, 2014; Maxwell, 2012; Urquhart, 2012). Likewise, the order of questions can be varied depending on the nature of the conversation and direction the interviews takes (Denscombe, 2014), with ability to add more questions if needed (Austin & Sutton, 2014).

The pilot study aimed at investigating those factors affecting the adoption of EPS by different stakeholder participants in Tripoli in September 2015, which led to the empirical study. The research sample for the empirical study composed 28 participants: customers (9), telecommunication firms (staff and top managers) (9), banks (Libyan and non-Libyan) (4), government bodies (3) and intermediate companies (e.g., MasterCard, Visa cards, Credit cards) (3) (full raw data are available upon requested). To carry out the interview, the ethics approval was obtained from the Faculty of Human Research Ethics Committee at De Montford University, followed by time, date and place for the interviews were arranged, and a brief introduction about the research was given to the participants, with data were conducted and recorded in Arabic and then translated into English (using Arabic and English native speakers).

### Coding

Coding in GT was an essential analytic procedure used in this study (Strauss & Corbin, 1990). This section clarifies the three main coding procedures (open coding, axial coding and selective coding) used for analysing the data.

#### Open coding process from the customer perspective

Conceptualising is the first step in GT, with the raw data being broken down examined and coded. This process is applied without restraining and using any filters, which helped to become familiarised with the data and resulted the data being coded in the same way (same category) to develop theoretical elaborations with emerged using theoretical memos. Table 1 and 2 summarises the main categories emerged during the open coding stage. This included the consideration that certain events share common characteristics with other properties, hence there needed to separate them from the others. The study used these common properties to group the data within same category (Strauss & Corbin, 1990) as will be shown in Figure (1) and Figure (2), with regard to the organisational and customer's perspective.

**Table 1. Open coding categories (customer perspective)**

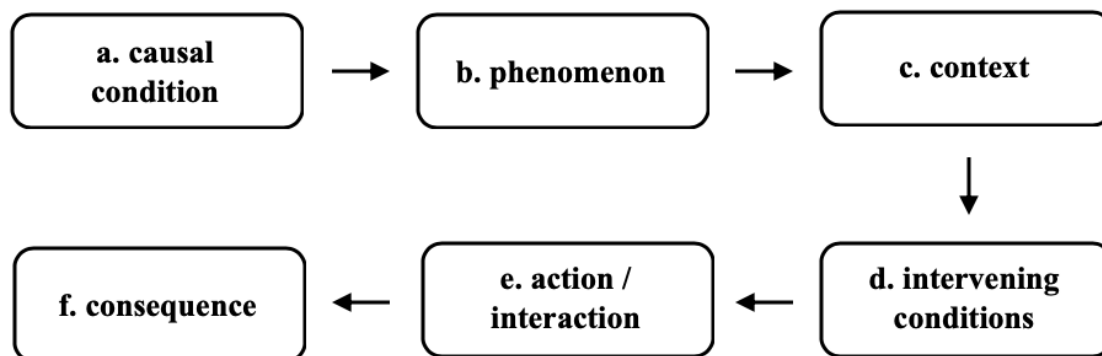
Category	Codes
1. Customer characteristics	• Knowledge • Customer experience • Customer skills
2. Social impact	• Social influence • Resistance to change • Customer awareness • Age • Education level • E-payment system culture • Customer needs
3. Economic factors	• Perceived benefits • Cooperation • Mutuality of stakeholder benefits • Cost of Internet • Standard of living • Commercial awareness among customers • Withdrawal of control • Marketing business wariness • Feasibility studies for e-payment system • Islamic banking • Competition
4. Technical concern	• Security • Trust • Reliability to EPS • Acceptability • Ease of use • Accessibility • Convenience • Post coding

**Table 2. Open coding categories (organisation perspective)**

Category	Codes
1. Staff characteristics	• Knowledge • Staff experience
2. Social influence	• Social influence • Resistance to change • Staff awareness • Age • Education level • Change management • Ease of communication between companies and customers
3. Economic factors	• Perceived benefits • Cooperation with external entities • Mutuality of Stakeholder Benefits • Cost of Internet • Competition • Withdrawal of control • Islamic banking factor • Banking infrastructure • Marketing business • Standard of living
4. Technical concern	• Security • Trust • Reliability to EPS • Technical infrastructure • Acceptability • Ease of Use • Accessibility • Convenience • Post coding
5. Organisational factor	• Change of management • Availability of the service • Training courses • Availability of electricity
6. Political issues	• Instability of political situation • Governed by a single person • Cooperation between government, banks and telecommunication companies. • Political power • Legal framework

### Axial coding

The process of axial coding analysis can be easier to understand when a paradigm model is implemented (Figure 1). The paradigm comprises six components that helped to consider the data and its connection within categories (Strauss & Corbin, 1990). The study determined which categories are important, and what axial coding needs to be elaborated, based on the properties of each category, and resulted ten important categories were extracted. Hence, four categories were reported to appear at the axial coding stage: customer attitude, EPS adoption beneficial, organisation attitude and political issues. Likewise, the model (Figure 1) was used to develop the theory and techniques for shaping the relationship between the core category and other categories, and then to group them systematically (e.g., according to their properties and dimensional ranges).



**Figure 1. The paradigm model adopted from Strauss and Corbin (1990)**

#### *Customer attitude*

The first category, as shown in Figure (2) and Figure (3), clarifies the ways in which the subcategories interacted and were linked with each other, as well as what the categories related to reference to the axial coding analysis.

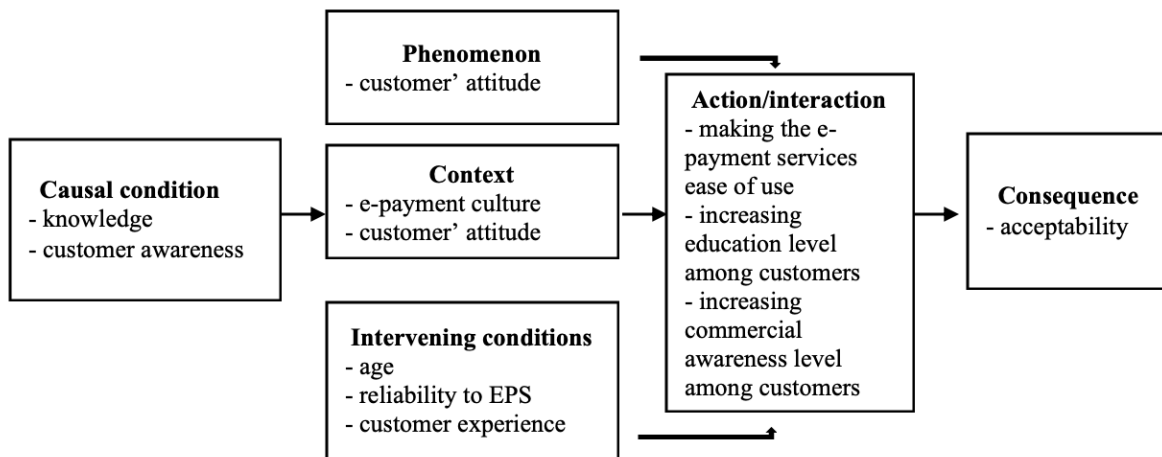


Figure 2. Axial coding (customer attitudes category)

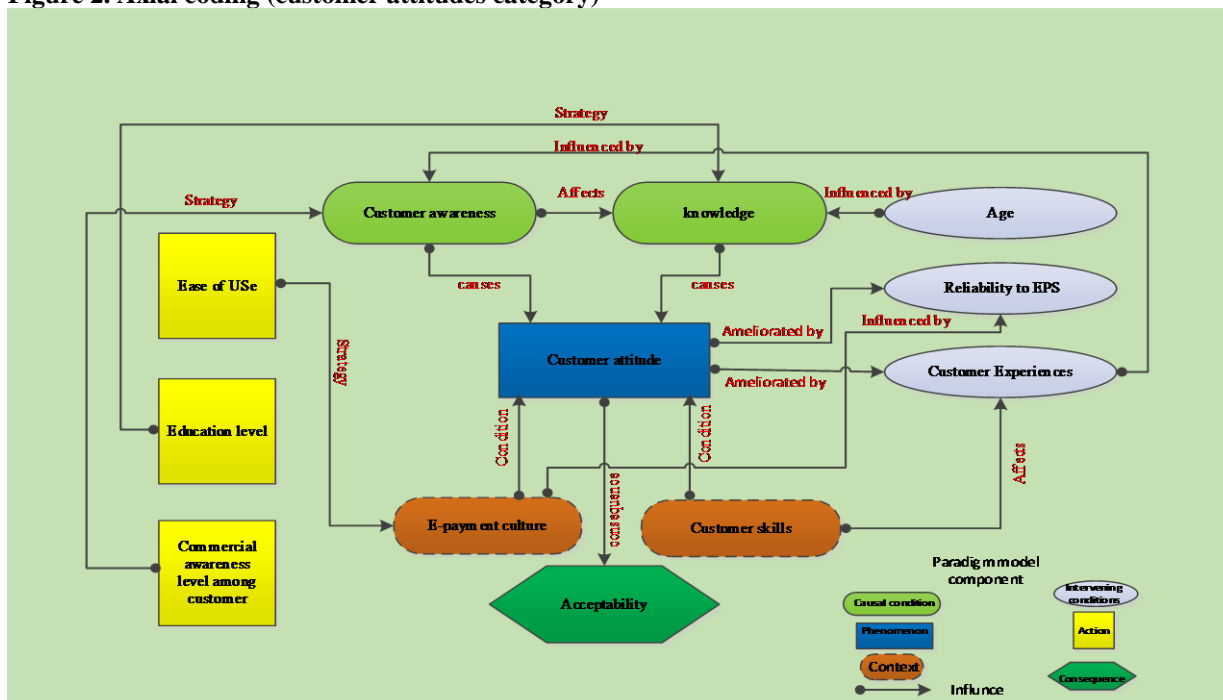


Figure 3. The relationship between the customer attitudes category and its subcategories *EPS adoption beneficial*

The second category, as shown in Figure (4) and Figure (5), clarifies the ways in which subcategories interacted and were linked to others in relation to axial coding analysis.

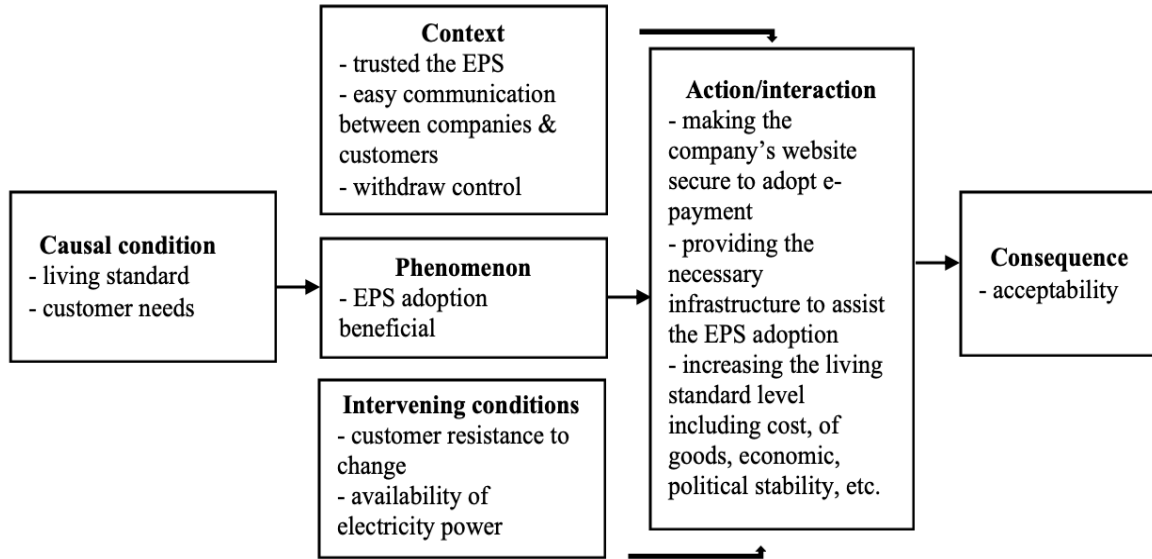


Figure 4. Axial coding (EPS adoption beneficial category)

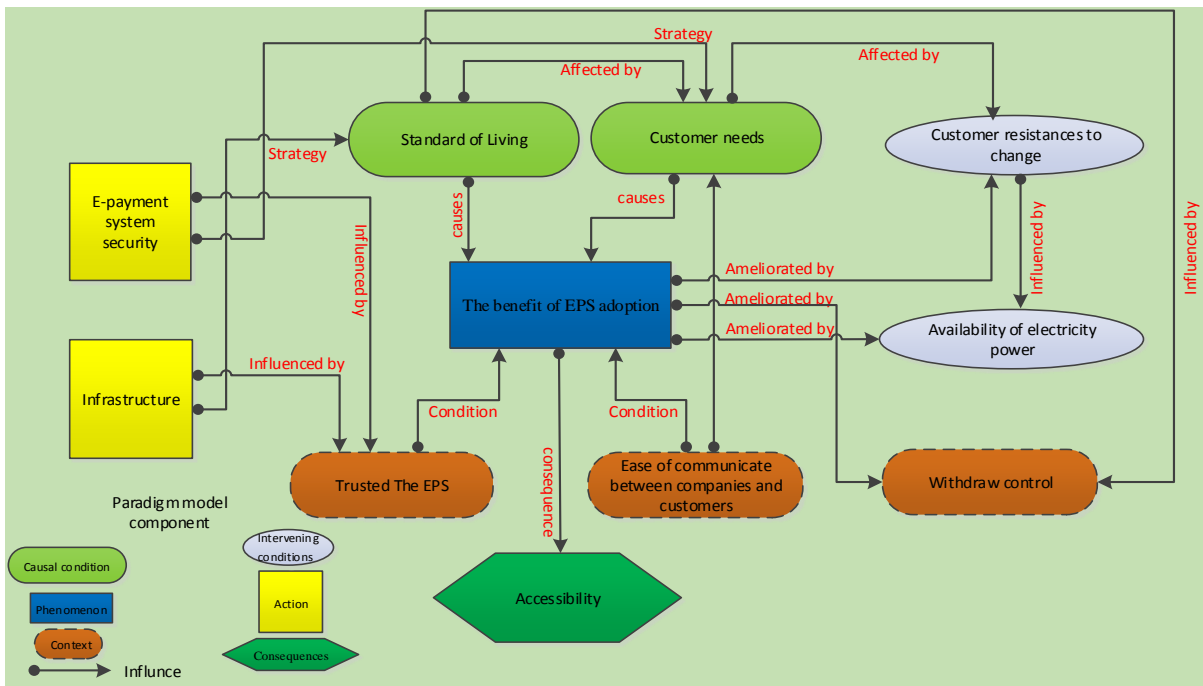


Figure 5. The relationship between the EPS adoption beneficial category and its subcategories

**Organisational attitude**

Figure (6) and Figure (7) clarifies the ways in which the subcategories interacted and are linked with each other in relation to the axial coding analysis.

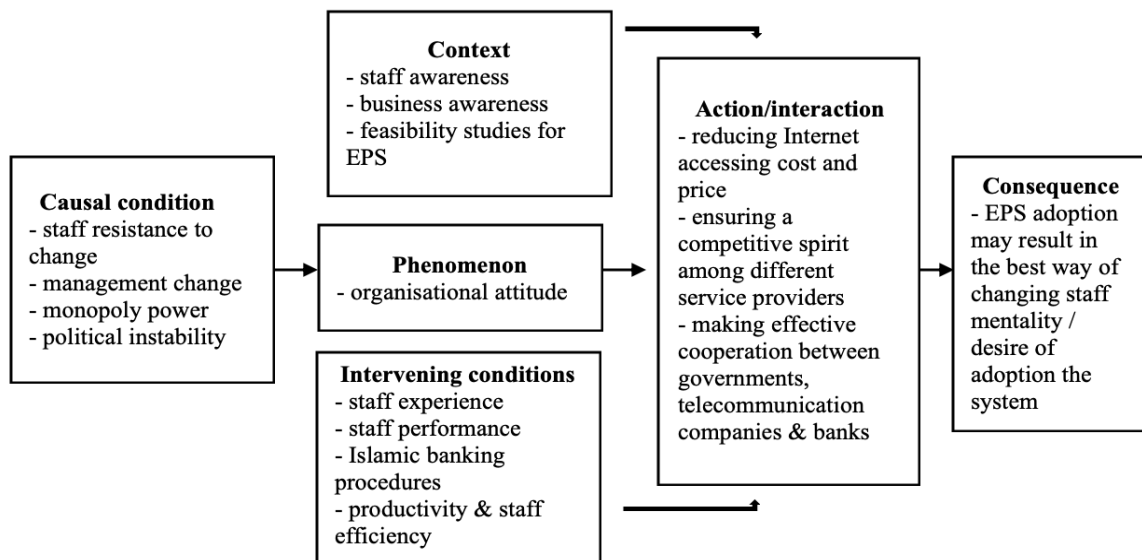


Figure 06. Axial coding (organisational attitude category)

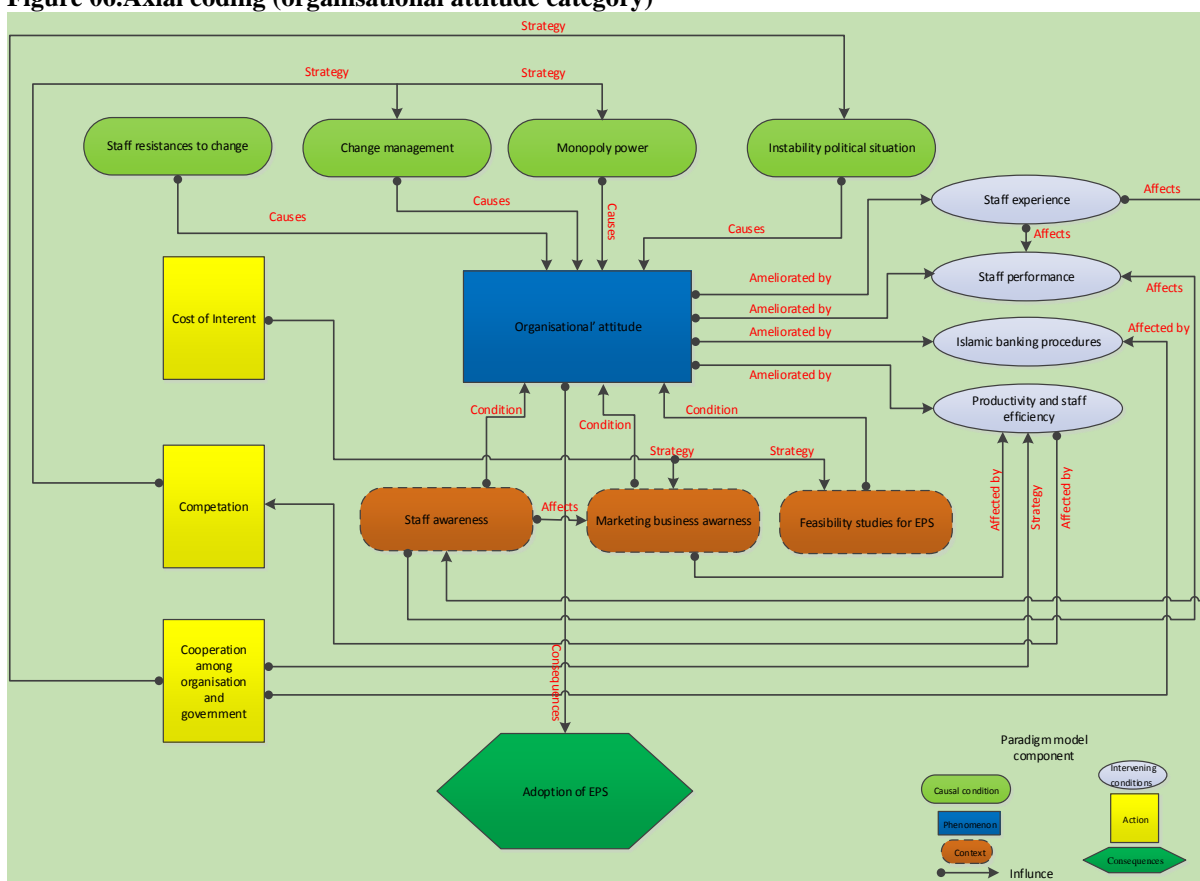


Figure 7. The relationship between the organisational attitude category and its subcategories  
*Political issues*

Figure (8) and Figure (9) clarifies the subcategories interacted and were linked with others and their relation to the axial coding analysis



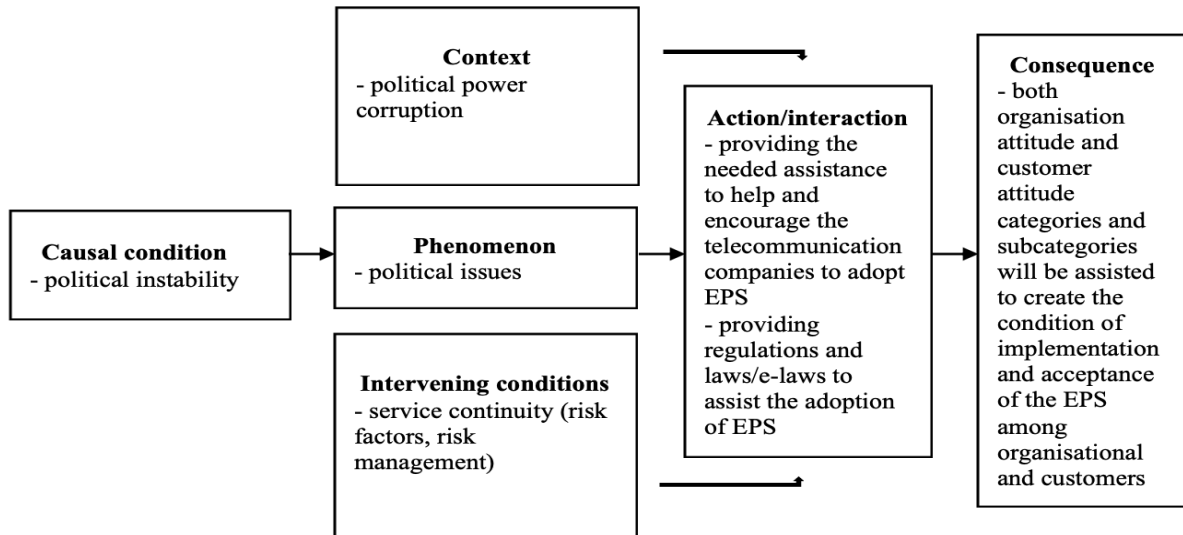


Figure 8. Axial coding (political issues category)

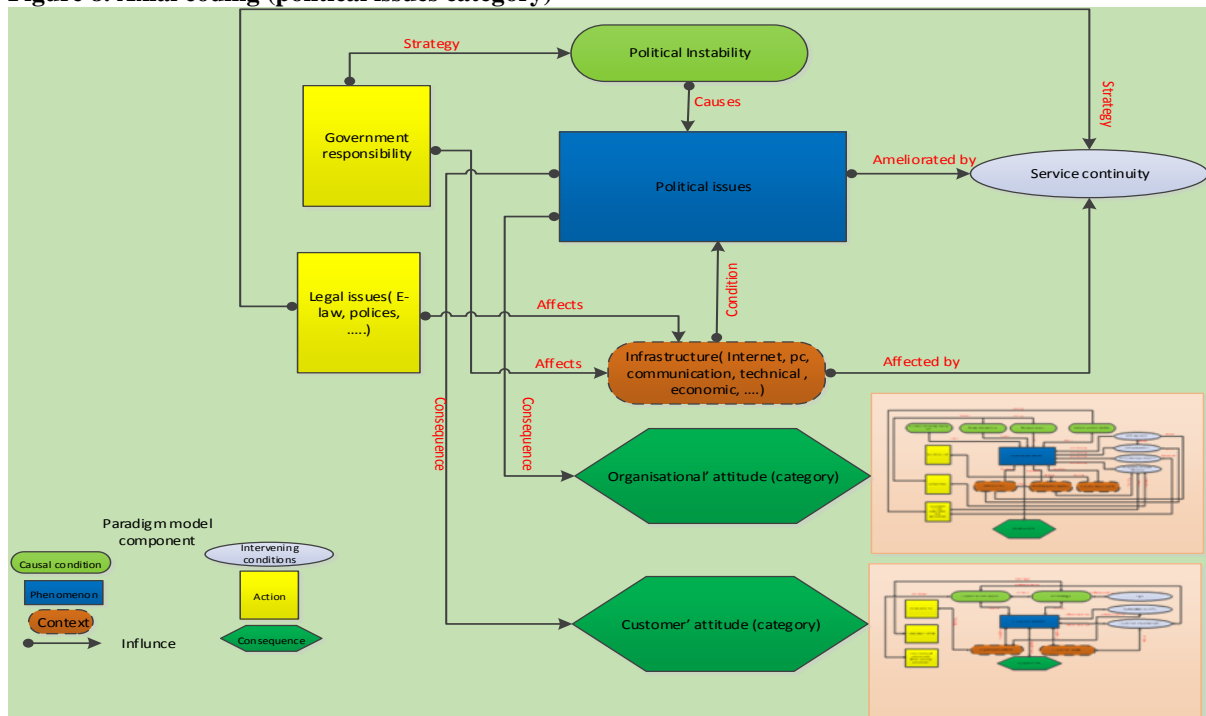


Figure 9. The relationship between the political issues category and its subcategories

Finally, through the clarification process for the data analysis four categories emerged from the axial coding stage, each of which takes the organisational and customer's perspectives. Important factors were revealed based on the respondents' responses, and these were attributed to a variety of issues caused by government responsibility, the telecommunications companies' plans to adopt the EPS, infrastructure, political willingness, etc. These factors would have a direct effect on attitude and the willingness of respondents (both organisation and customer) toward the adoption of EPS.

**Core Category (GT emerging from this research)**

The final step in the analysis was to create a core category (Figure 10). The process involved choosing and identifying core categories in reference to other categories. More importantly, it absorbed and validated the filing, refinement and development of categories (Charmaz, 2006; Strauss & Corbin, 1990). The GT-based research starts with research questions, and then answers to these questions emerges during the research process. In other words, through building a core theory, GT, the study can present questions requiring answers by the end of the research. Creating and selecting core categories based on Strauss and Corbin (Strauss & Corbin, 1990) techniques of required several steps as follows: (1) explicating the storyline, (2) relating subcategories

around the core category through implementation of the paradigm model; (3) relating categories at the dimensional level; and (4) validating the relationships in reference to literature.

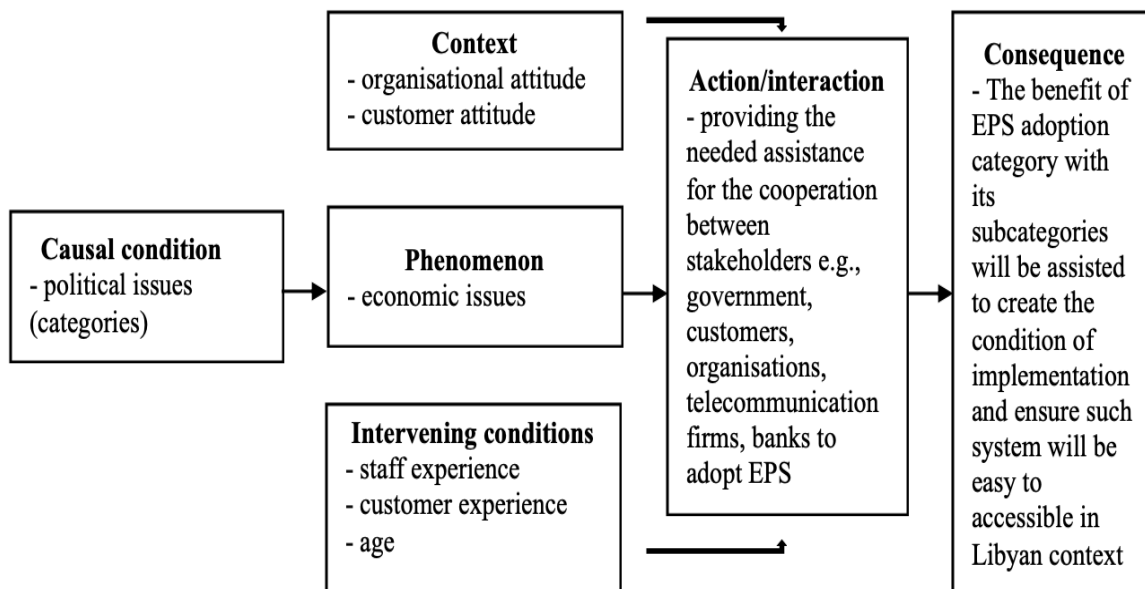


Figure 10. Selective coding / core category (economic issues category)

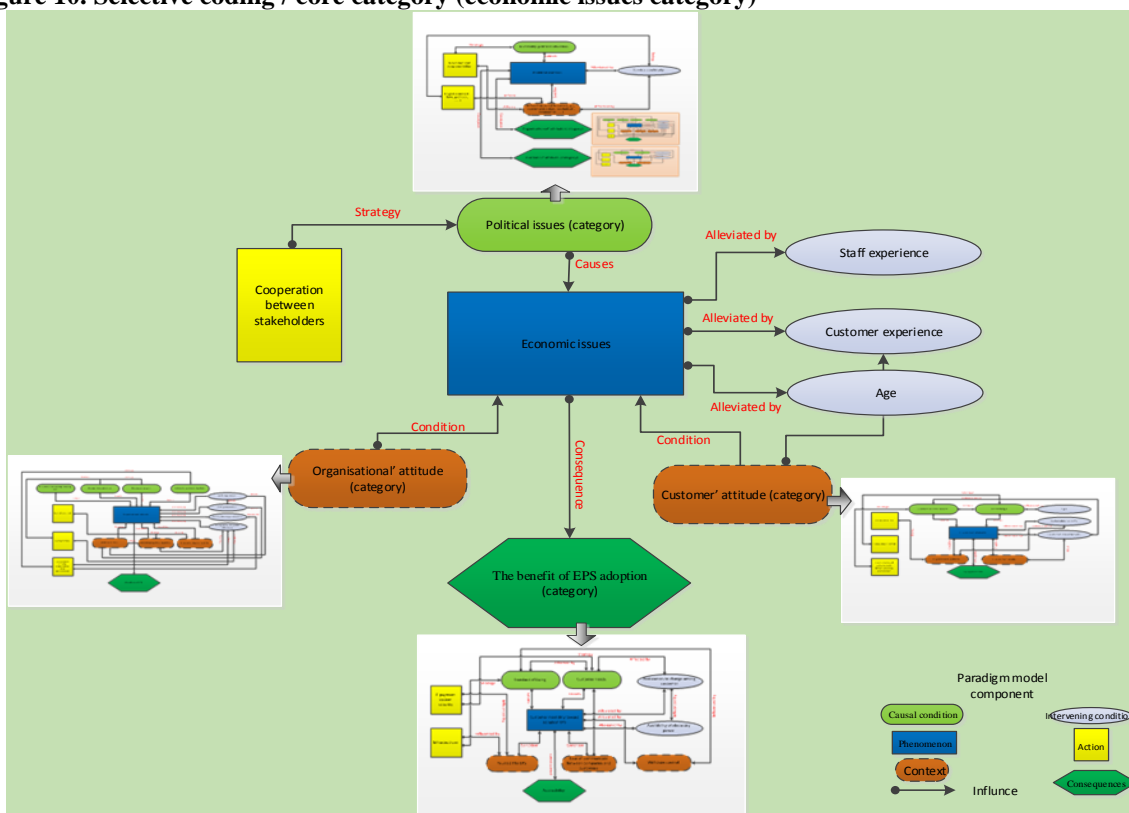


Figure .11The relationship between the core category and its subcategories

**Identifying the storyline**

Investigating and exploring the factors affecting the adoption of EPS amongst telecommunications companies in Libya was the primary objective of the current research. Through analysis of the data obtained from the respondents’ factors emerged, which were then verified and corroborated in terms of the role they played in the adoption of EPS in the Libyan aspect. For example, it was revealed that the adoption of EPS is influenced by customers’ attitudes, the perceived benefits, organisational attitudes, and political ramifications.

Despite taking into account those factors related to the benefit of EPS adoption and organisational attitudes, there were still some (individuals and staff) who refused to migrate from the traditional system to adoption of an e-system / online transactions. However, as stated earlier, a high rate of awareness amongst

individuals and staff can assist in shaping the decision-making process undertaken by top management at telecommunication companies to adopt the e-system, and thereby, reducing EPS refusal. This also results in diversity at the levels of standards of living and/or conditions experienced by individuals.

This could then determine / (dis)allow their use of the Internet at reasonable prices when compared to their salaries. In addition, organisational attitudes - in regard to other factors - reflected the staff opinions working in the telecommunications sector. For instance, it was established that the level of government support for such companies, through the provision of laws, regulations, and a coding system, have had a significant impact from a staff perspective, in making decisions concerning the EPS adoption. The current situation in the Libyan telecommunications sector - concerning the criticality of identifying factors impacting the EPS adoption - emphasised the second step of creating a core category, and establishing relationships between categories within a core category by applying paradigm model.

#### ***Relating the core category to other categories at a dimensional level***

The political issues category and its subcategories can be seen as causal conditions, underpinning the core category. The changes in the perceptions and attitudes of the Libyan people mean that the interaction between respondents' attitudes were the central phenomenon exploited to explore those factors that affected the EPS adoption from the political standpoint. In other words, the different intention referred to be that respondents were associated with a set of events and conditions.

These subsequently directed the study towards the phenomenon such as the cause of political instability as seen to play a vital role in relation to the adoption of EPS. This meant that the Libyan unrest situation has influenced respondents' attitudes concerning how far the new government is able to support the EPS adoption, and how e-system adoption would contribute to the Libyan economic growth. The context is specific - actions and interactional strategies are taken to manage /handle phenomena with regard to respondents' perceptions, and the infrastructure facilitating the EPS adoption in the Libya.

Hence, the factors that emerged from the responses were used to manage the matter. In other words, these strategies, in the context where the EPS adoption was handled (as shown in Figures (10), organisation staff), could affect customers' attitudes towards acceptance of EPS. Thus, the decision-makers at telecommunications companies, and the new government might need to develop an infrastructure to support such adoption. This can be achieved by providing feasibility studies on the adoption, increasing business awareness among staff and customers, and discussing with the Libyan government. The lack of EPS infrastructure in Libya is variously attributed to the lack of awareness, knowledge, and poor motivation on the part of the government to promote such system.

Additionally, certain condition sets (staff and customer experience, age etc.) affected the relevant action and interaction strategies, as represented in Figure (11). Staff experience, customer experience and age were all affecting the attitudes of decision-makers to adopt the EPS. In fact, such decision should be made and consulted between the government and telecommunications companies. Therefore, the strategies supporting actions and interactions put in place were considered to manage this matter. These focus on the experience and age of both staff and customers helped them to handle and provide the requirement for online deals and payment processes, and to encourage them adopting the e-system. As most of the respondents were young and experienced online-payments, this would increase their willingness to use the Internet, technologies and secured websites, with awareness of adopting the EPS problems. Cooperation between the government, customers, organisations (e.g., banks, organisations, and businesses) has been considered as an action / interaction strategy that can overcome the barriers affecting the EPS adoption.

The majority of respondents considered this as factor that would lead stakeholders to take on a procedure that helped them to understand the benefits and profits, contributing to economic growth in Libya. Alternatively put, if cooperation exists between organisations and governments, the decision-makers would expect to manage the issue and maintain all the requirements to provide the stakeholders with the capability to use the Internet, technologies and then purchase online using the EPS. Furthermore, any strategies taken to allow the system implementation would have consequences. In the case of the core category, customers' attitude might change towards the EPS adoption, meaning that their attitudes would be positively affected due to the cooperation between themselves and other stakeholders that would lead to *power* them to adopt the EPS in Libya.

Finally, as mentioned by Strauss and Corbin (Strauss & Corbin, 1990), the final stage of relating categories, was carried out at higher more abstract level of analysis. During the development of GT, it was found that all the factors illustrated above effect on the EPS adoption. The variety of organisational and customer attitudes, and perspectives of EPS adoption, influence the economic factors and their subcategories because of influence from various other factors as shown in Figure (10) and Figure (11).

### ***Discussion and validating the relationship between the findings and literature***

This section highlights the way in which the emerged factors impact on the proposed model. The variety of customer attitudes towards adopting the EPS influenced economic factors and their subcategories in diverse ways. For example, age-grading especially for youth population was influenced by the limitation on the knowledge available to them (Al-Mabrouk & Soar, 2009). Moreover, this factor is also indirectly influenced by economic factors such as standards of living and the Internet penetration, in terms of the quality level and the employment availability, income, quality of education level, cost of goods, economic and political stability, etc. (Baptista, 2000).

Furthermore, customers' awareness in the use of e-system is affected by experience level, which is also influenced by economic factors (Al-Mabrouk & Soar, 2009; Amedu, 2005). However, resistance to change amongst staff appeared to be a result of lack of experience, which could have a significant influence altering changing top management attitudes at telecommunications companies. Nevertheless, it could influence economic factors (Ginige et al., 2001; Zuhunda et al., 2011). Given that the staff attitude differed in terms of their perceptions. It is, nevertheless, recognised that this can affect various other factors such as cooperation between the government, banks and customers, which in turn can be influenced by economic factors. Thus, it was evident that cooperation would not occur without experience or awareness amongst such entities (R. J. Mann, 2003; Rosen, 2001; Zuhunda et al., 2011).

It was also observed that without essential factors related to the benefits of EPS adoption companies would not accept the system as a sole application on their websites, as customers are predominantly concerned with security issues (Abukhzam & Lee, 2010; Havinga et al., 1996; O'Mahony et al., 2001; Shon & Swatman, 1998; Swaminathan et al., 1998). Furthermore, customer attitude, as a category, were affected by age, reliability of EPS and customer experience, and this is directly affected by economic factors (Abukhzam & Lee, 2010; Davis, 1989; Djasmasbi et al., 2010; Ullah et al., 2013).

### **Discussion and conclusion**

Trust and reliability were extremely linked to security issues and represent an integral part of the multimedia transaction processes (Gardachew, 2010). A staff member from the Administration of Republic Bank branches in Tripoli submitted that the adoption of EPS within the telecommunications sector would create trust between customers and their banks; encouraging them to conduct more multimedia transactions, and consequently boosting their trust in telecommunications companies and using their website facilities for such process. This is supported by the comment, which was given by a respondent: An electronic clearing system will establish trust between customers and their banks, increasing the volume of exchange / transaction between the former and the latter.

From a purely commercial point of view, customers using EPS via their banks, increase benefits for banks using this service (RES99, 40+). The importance of the above statement is that if proper security measures are put in place, this would then increase satisfaction and trust among customers. This assertion is further buttressed by a respondent: Provide the simple things that make the adoption of EPS easier for customers, in terms of simpler methods when using the EPS, including accessibility and security (RES95, 30+). The findings from the review of prior literature regarding the challenges facing adopting new technologies from both organisational and customer perspectives are in line with some of the findings in the current work. For instance, some have (Abukhzam & Lee, 2010; Farag, 2017; Mrabet et al., 2018; Swaminathan et al., 1998; Ullah et al., 2013) concurred with the fact that trust is one of the most important concerns regarding the integrity and overall embracing of online transactions.

In their work, Im et al., (2008) also explained the effectiveness of websites and suggested that the overall quality of a website (security and robustness) should be enhanced to improve the overall trust and satisfaction of potential users. Equally, the authors reported that the reliability of a website and its response time to user queries is essential toward supporting the performance of online transactions. Furthermore, Pavlou and Chai (2002) supported this argument by affirming that the concept of reliability is the singular most important factor in the context of online transactions, when shopping via the Internet and engaging in customer behaviour. Lee and Turban (Lee & Turban, 2001) found that lack of trust is perceived as an important reason for customers not embarking on multimedia transactions.

To sum up, this paper discussed the adoption of EPS in Libya by exploring the technical factors (trust, security and reliability of EPS) based on the perceptions of both organisations and customers. Based on GT, a detailed analysis revealed the impact of core categories on the adoption of EPS in Libya that illustrated those factors that emerged from our respondents affecting the adoption. In addition, as shown in Figure (10), GT revealed the important factors and strategies taken to facilitate and identify those barriers that affect respondents' attitudes to such system. Finally, the main technical factors all have impact on users' attitudes towards a final positive acceptance of EPS. The impact of these factors is playing a vital role in encouraging Libyan customers to conduct more online transactions, consequently boosting their trust in telecommunication sector and the security of using their website facilities for transactions.

The implications of the limited technical support have reduced faith in online transactions, endangering the acceptance of technologies such as EPS. Thus, the current research findings showed that all the emerged factors influenced Libyan customers, although the implication through its unique GT method indicated that ultimately there is a good *likelihood* that organisations would integrate EPS into their payment systems in the future. The paper contribution also lies on revealing new and vital factors relevance to Libya including standard of living and unstable political status. This can lead to present several suggestions such as: The government is highly recommended, to increase awareness of EPS; as well as cooperates with telecommunication sector; promotes an open and competitive (public/private) within the telecommunication industry to lead such innovation; and establishes laws and legislations to adopt and manage the EPS.

Retail electronic payment systems and services (Libya) different payment systems and platforms, products and services that allow companies, individuals, the government and other economic agents to transfer money as part of their daily activities, without using cash. Currently, seem have a growing presence in the economy, thanks to the dynamism that digital media innovation has brought with new solutions and payment products based on the internet and mobile telephony (Al-Okaily et al., 2020; Alghizzawi et al., 2018; Elbasir, 2015; Habes et al., 2020; Muhaisen et al., 2020; Salloum, Al-Emra, et al., 2019). Meanwhile, it would be a good idea to raise awareness through these media to increase the adoption of it in Libya.

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