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The Language of Manipulation in Arabic Phishing Texts

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A B S T R A C T

This study examines the utilization of language to influence readers in Arabic phishing texts. The objective aims to discern the primary persuasive strategies and conduct a manual analysis of a collection of 10 authentic phishing texts. After deconstructing the language within each message, a statistical analysis was performed to identify the frequency with which each strategy appeared. The findings indicate that framing and pathos were the predominant strategies employed to persuade victims. To validate these findings, a concise survey in the form of a Google Forms questionnaire was carried out, enabling comparison with authentic participant reactions to the messages. Participants were instructed to rank the same 10 messages from most to least compelling. The results did not align with the manual analysis. Participants determined that logos **(Appealing to Logic and Rationality**) was the most persuasive, rather than framing and pathos. The observed difference implies that frequency of textual elements does not necessarily correspond to their effectiveness for recipients, thereby underscoring the importance of integrating both analytical methods to obtain a holistic view of phishing strategies.

1. Introduction

Phishing texts have emerged as a predominant instrument in cybercrime, leveraging human trust and psychological manipulation to acquire sensitive information. Although the strategic dimensions of phishing attacks have been well examined, the linguistic characteristics and deceptive language strategies employed in phishing communications are still inadequately investigated. Phishing messages are crafted to resemble authentic communications, often imitating trusted organizations to prompt recipients to respond. Comprehending the linguistic strategies and characteristics underlying these messages is essential for countering phishing attacks. Current research on phishing predominantly emphasizes technological characteristics (e.g., domain spoofing, viruses). There is little emphasis on the language strategies, language characteristics and psychological triggers, particularly in Arabic phishing texts, utilised in phishing texts. This study seeks to investigate the strategies embedded in phishing texts, offering insights into the linguistic techniques employed to mislead and influence recipients. The research follows these procedures:

- **Identification of Elements in Phishing Texts:** Owing to the imprecision of algorithms employed in Arabic language processing, researchers have preferred manual analysis to investigate the language strategies of phishing texts, including style, tone, and structure, in conjunction with technical analysis to differentiate phishing texts from legitimate ones.

- **Classification of Common Strategies:** Recognized language strategies are methodically organized to identify patterns frequently present in phishing texts.

- **Implications for Phishing Detection:** The linguistic relevance of these strategies is examined to enhance phishing detection systems through linguistic analysis. This paper examines three critical research questions:

1. What strategies are predominantly employed in phishing texts to mislead recipients?

2. From the individuals' perspective, which one is the most persuasive strategy?

3. Do the effects of these strategies on recipients align with those identified through manual analysis?

2. Literature Review

Persuasive texts comprise various elements, with language being a crucial factor. Most research indicate that language comprises two fundamental components: a structure component and a usage component. Structural language pertains to the formal elements of language, encompassing syntax, morphology, and phonology. It includes the rules and patterns that regulate sentence formation, word structure, and sound organization, which together define the systematic nature of language. Language use refers to its functional and communicative aspects, encompassing both pragmatics and semantics. It pertains to the application of language within context, adjusting to social, cultural, and situational elements to convey meaning effectively. This component encompasses discourse organization, conversational norms, and the pragmatic application of language to achieve specific communicative goals [1]. The researchers assert that the structural component is analogous to linguistic elements, whereas language usage pertains to linguistic strategies. Both are essential; nevertheless, our research will emphasize on strategies, accompanied by a comprehensive elucidation of their importance. This section comprises two subsections: the first describes language manipulation, while the second examines the strategic use of language in persuasion.

2.1 Language Manipulation (Persuasion)

According to prior research, linguistic manipulation is a deliberate use of language intended to influence, persuade, or deceive an audience. It encompasses nuanced rhetorical, psychological, and discursive strategies that influence perception and decision-making. Researchers in discourse analysis, advertising, forensic linguistics, and digital communication have examined various aspects of manipulation, delineating its fundamental attributes and practical consequences. This section reviews relevant studies on manipulation, emphasizing its definition, linguistic components, and strategies.

Manipulation, in several fields, depends on particular linguistic characteristics, such as ambiguity, emotive appeals, and strategic framing. Advertising employs linguistic and emphatic strategies to shape consumer behavior, while forensic deception studies focus on lexical indicators, and digital fraud relies on rhetorical persuasion techniques. Understanding these features is crucial for identifying and mitigating deceptive discourse in both conventional and digital contexts. Researchers have characterized manipulation from multiple perspectives, highlighting its psychological, social, and strategic dimensions:

Christie and Geis (1970, p.1-9) associate manipulation with Machiavellian characteristics, wherein individuals resort to deceit and exploitation for selfish advantage, frequently neglecting ethical constraints. They perceive manipulation as a behaviour motivated by self-interest [2].

Tedeschi and Felson (1994, p.295) characterise manipulation as a social influence strategy designed to regulate the behaviour of others, frequently via indirect, dishonest, or exploitative methods. They emphasise its coercive characteristics in interpersonal relationships [3].

Buss and Duntley (2008,p.60) characterise manipulation as the deliberate employment of strategies to exploit an individual's psychological or emotional vulnerabilities for personal advantage. Their emphasis is on the intentional nature of manipulation and its dependence on comprehending and exploiting human weaknesses [4].

Rozina and Karapetjana (2009, p.111-122) characterise linguistic manipulation as the strategic employment of language to sway others, frequently via indirect speech acts. It is frequently encountered in legal and political discourse, functioning as a mechanism for persuasion. In contemporary societies, mass media enhances linguistic manipulation through slogans, press releases, and visual-linguistic strategies, rendering language a crucial tool for ideological influence [5].

Nikitin and Freund (2015) define manipulation as a strategic social behaviour that influences the decisions and actions of others without their conscious understanding. This concept highlights the subtlety and nuance of manipulation and its use in discreetly influencing decision-making processes [6].

Lewicki et al. (2016) argue that manipulation functions as a negotiation tactic, involving deception, indirect influence, or coercion to gain an advantage in social or business interactions. This viewpoint links manipulation to the wider domain of bargaining [7].

Latest study has expanded the comprehension of manipulation, especially with digital impact, social interactions, and behavioural economics:

Spencer (2020) defines manipulation as a purposeful attempt to shape an individual's behavior by taking advantage of cognitive biases or vulnerabilities, highlighting its intentional and strategic nature, particularly in contexts where individuals may lack complete awareness of external forces [8].

Ishihara and Sawada (2020) present a methodological framework for detecting manipulation in regression discontinuity designs. They propose that manipulation may be identified by analysing the distortion of variables, providing a systematic method for tackling manipulation in empirical research [9].

Shyroka (2020) further clarifies the concept of manipulation, describing it as a deliberate provocation that leads individuals to face certain conditions, make choices, or perform actions that serve the manipulator's objectives. This definition underscores the psychological and interpersonal dimensions of manipulation, where individuals are guided toward decisions that may not fully originate from their own volition [10].

Gray et al. (2020) assert that manipulation is a common feature of consumer experiences, ranging from subtle psychological nudges to overt advertising strategies aimed at capturing attention and increasing sales. They illustrate how manipulation is ingrained in digital and economic interactions, shaping consumer behaviour to the advantage of firms and advertisements [11].

Chang et al. (2021) investigate the influence of digital automation on manipulation, specifically concerning social media's effect on democratic discourse. Their research underscores the manner in which automated systems and social bots skew public opinion and misrepresent varied perspectives, so eliciting worries over misinformation and the integrity of online discourse. These modern definitions illustrate that manipulation functions across multiple domains, including psychology, consumer behaviour, political discourse, and statistical methods. A prevalent thread across these viewpoints is the deliberate and frequently covert nature of manipulation, which benefits the manipulator while potentially compromising the autonomy of the impacted individuals [12].

2.2 Linguistic Strategies of Manipulation Process

Manipulation in language encompasses a number of strategies used to influence or persuade people. The following verbal strategies are commonly employed to achieve manipulation:

 1-Ethos (Appealing to credibility) Ethos refers to the credibility and trustworthiness of a communicator, which is essential for persuasive effectiveness. It involves presenting oneself as reliable and authoritative to enhance the impact and persuasiveness of the message. In social and environmental reports, ethos is developed by exhibiting expertise, authority, and trustworthiness [13]. In professional situations, particularly within STEM fields, authors improve their ethos by showcasing their professional background or organizational membership to boost credibility [14]. They generate trust by exhibiting their knowledge, thorough comprehension of the issue, and professional integrity, which boosts the persuasiveness of their arguments, especially in academic and professional settings [15] In linguistic manipulation, students enhance their credibility by highlighting their reliability and fostering favorable interactions. This is achieved through politeness, respect, and referencing shared experiences to develop trust [16].

2-Pathos (Emotional Appeal) Pathos focuses on employing emotionally charged language to evoke a strong emotional response. It seeks to arouse emotions such as sympathy, fear, or hope to urge action or compliance, and emotional appeals can have a substantial impact on decision-making [13]. In social and environmental reporting, pathos is used to evoke urgency, responsibility, or empathy, often through emotional language, personal anecdotes, and vivid imagery [14]. Similarly, politicians often utilize emotional appeals to garner support by creating a sense of urgency, fear, or hope [29]. Euphemisms constitute a variant of emotional manipulation, when allusions to authoritative persons augment the credibility of an argument [30]. In persuasive contexts, pathos is applied by underscoring vulnerability, stressing emotional significance, and employing emotionally charged language to provoke a strong response from the audience [16].

3-Logos (Appealing to Logic and Rationality) Logos depends on logical structure, rational thinking, and evidence-based arguments for persuasion. It employs facts, figures, and logical reasoning to persuade people, rendering the message appear substantiated [10]. In papers concerning social and environmental issues, logos is frequently utilized to convey data, figures, and logical explanations [14]. Logical thinking is essential in STEM fields, requiring structured arguments and substantiated claims [15]. Within the context of linguistic manipulation, students draw on logical reasoning and empirical evidence to support their arguments [16].

4-Repetition: In their 1999 study, "The Effects of Task Repetition on Linguistic Output," Gass and Mackey investigate the effects of task repetition on second language acquisition, particularly its impact on fluency, accuracy, and complexity of language production. The study highlights the advantages of task repetition for language learners; nevertheless, it does not explicitly advocate for repetition as a strategy to manipulate language for the purpose of influencing others' perceptions or actions. It can be argued that task repetition may indirectly facilitate linguistic manipulation by enhancing learners' capacity to generate more precise and complex language. As students engage in repetitive tasks, their output becomes refined, enabling the utilization of increasingly sophisticated linguistic structures. These refined skills could subsequently enable individuals to influence or persuade others more successfully. The study emphasizes the beneficial effects of repetition on language learning but does not specifically investigate its potential as a mechanism for manipulation in persuasive communication [17].

5- Flattery serves as a strategy instrument for establishing social connections and acquiring benefits in diverse social contexts. In political speech, rhetorical strategies such as captatio benevolentiae are employed to win goodwill and favor from an audience (Casazza & Guidetti, 2018). Aside from politics, flattry is vital in fortifying connections and promoting collaboration. Compliments and expressions of solidarity influence individuals' perceptions of each other, enhancing the positivity and persuasiveness of encounters [19]. The Jocular Flattery Study conducted in China by (Jia Qiu et al., 2021) underscores the significance of humor and flattery in strengthening social connections. In digital communication, flattery is notably efficient in alleviating tension, mitigating combative interactions, and preserving social harmony [20].

6- Social Proof is a psychological phenomenon in which individuals are inclined to emulate the acts and beliefs of others, presuming that widespread agreement indicates credibility and accuracy [21]. Political leaders frequently use this strategy to shape public perception by claiming majority backing, thereby strengthening the impression that their stance enjoys broad support [22]. The "illusory truth effect" amplifies this influence, as frequent exposure to a statement enhances its perceived veracity, irrespective of its factual correctness [23]. Social proof is a crucial element in the dissemination of disinformation, as mere repetition can render incorrect assertions plausible [24]. In marketing, social proof is frequently employed to sway consumer behavior via designations like "bestseller" or "most recommended" [25]. Both advertisers and politicians depend on quantitative data and sweeping generalizations to bolster legitimacy (Miller & Prentice, 2016). Moreover, endorsements from esteemed individuals enhance persuasiveness, rendering arguments more credible [26].

7- Framing is a potent method employed to influence perceptions of a problem by accentuating specific elements while minimizing or disregarding others. It is a communication strategy that shapes audience interpretation of information and meaning construction [27]. Authors frequently employ framing to influence public perception by highlighting particular aspects while omitting others [15]. This method is essential in constructing narratives, reinforcing biases, and advancing specific ideological perspectives[28]. Political figures employ framing to synchronize audience perceptions with their objectives [29].

8- Appeal to Authority this strategy depends on citing authoritative figures or sources to enhance the legitimacy of a message or argument. By associating their assertions with esteemed authorities, manipulators can bolster their credibility, regardless of the false nature of their claims [30]. Peters et al. (2012) assert that this methodology entails employing expert opinions, research findings, and credible sources to substantiate an argument. Writers' reference established information to reinforce their arguments and convince their audience of the validity of their claims [15].

3.Methodology

This section talks about how the data were collected and analyzed to find the linguistic strategies utilized in phishing texts and how they affect people which answer the research questions:

3.1. Data Collection

The data of this study are of two types: qualitative represented by the deceptive texts, and quantitative represented by people's opinions concerning the most persuasive text.

About the qualitative data, the researchers collect the data on their own related to the difficulties they face in collecting deceptive Arabic texts from the databases found on Internet; as these databases mostly have few numbers of Arabic texts or even have none. Therefore, the data of this study is said to be a first-hand data. It consists of (10) deceptive texts collected from social media and from friends who have received such texts.

The other type- the quantitatively collected data are represented by the people's answers of a Google form questionnaire about the most persuasive text. They received the questionnaire which consists of two sections: the first asks them to provide their gender, age, academic qualification, their jobs and years of experience if there is any; the second section includes the same(10) deceptive texts are used in manual analysis that the people have to show whether they are (un)convinced by them or have neutral impression. The results of this questionnaire are analyzed statistically using SPSS software in order to determine the most and the least persuasive text and strategy. Yet, there is another source of quantitative data represented by the manual statistical analysis of the same chosen text conducted by the researchers themselves. Then the results of both sources are to be compared.

3.2. Limitation

One of the primary limitations of this study is that it examined only ten phishing texts, which is insufficient to capture the full variety of Arabic phishing messages. Additionally, the study involved a small sample of participants, limiting the generalizability of the findings. Another limitation is that the analysis focused solely on persuasive strategies without examining linguistic features such as grammar, morphology, or sentence structure, which may influence a message's perceived persuasiveness. Finally, while the manual analysis provides deeper insights, it introduces a degree of subjectivity and poses challenges for scalability.

3.3. Data Analysis

 The analysis is quantitative and looks at the deceptive texts from two points of view: the strategies used in the texts being studied to use deceptive language:

3.3.1. The Manual and Statistical Analysis of Strategies:

This section presents a detailed analysis of eight strategies identified through a comprehensive review of previous research, as described in Section 2.2. These strategies were selected to guide the examination of the ten texts under study. The purpose of identifying and applying these strategies is to achieve a deeper understanding of the linguistic and rhetorical features within the data. Statistical analyses were performed both manually and using SPSS software; accordingly, the following section outlines the manual and technical analyses.

The eight strategies adopted for the analysis are as follows:

1-Pathos

2-Ethos

3-Logos

4- Repetition

5-Framing

6-Flattery

7-Social proof

8- Appealing to authority

1- رسالة احتيال بنكية

-الموضوع/ تحذير أمني: حسابك البنكي مهدد بالإيقاف!

LS: Ethos
Claiming to be from "bank management" gives the impression of being more credible than you really are.
LS: Framing and Pathos
The message begins with a security warning to scare and urge the victim into acting quickly without thinking about it.

-عزيزي العميل،

LS: Flattery

Using a friendly and individualized tone offers a sense of trust and care, making the victim more receptive to the message .

ـلقد لاحظنا نشاطًا غير معتاد في حسابك المصرفي.

LS: Appealing to authority and framing .

Saying that the bank is watching accounts and finding suspicious activity gives the message false credibility, which makes it more believable.

لحمايتك من الاحتيال، يرجى تحديث بياناتك فورًا عبر الرابط التالي: [رابط مزيف]

LS: Logos and Pathos

The message employs bad reasoning to make the victim think that they need to update their information to stay safe. The urgency also makes people scared, which makes them more likely to follow through.

ـإذا لم تقم بالتحديث خلال 24 ساعة، فسيتم تعليق حسابك مؤقتًا.

LS: Framing and Pathos

The message opens with a warning about security to scare and hurry the victim into acting immediately without thinking about it.

ـشكرًا لتعاونك،

LS: Flattery and Social proof

Saying thank you makes the victim feel appreciated and like they are part of a routine procedure, which makes them more likely to comply.

ـإدارة البنك

LS: Appealing to authority

Calling the bank the sender makes the communication sound more official, which makes the victim more likely to believe it.

2ـ رسالة احتيال فوز بجائزة

ـالموضوع: تهانينا! لقد ربحت جائزة مالية كبرى!

LS: Ethos

Claiming to be an official letter about receiving a prize is what this is about.
.

LS: Flattery and Pathos

Beginning the message with "congratulations and announcing a grand prize" makes the victim less careful and more excited.

ـعزيزي المشترك،

LS: Flattery

Using a pleasant and intimate tone makes people feel like they can trust you and makes the message appear more real.

-مبروك! لقد تم اختيار رقم هاتفك عشوائيًا للفوز بجائزة نقدية قدرها 10,000 دولار!

LS: Framing and Social proof

If you say that the selection was" random ",it makes it seem fairer, which makes it more believable. The victim ignores possible risks because the prize is so big.

-للمطالبة بجائزتك، يرجى إرسال اسمك الكامل ورقم حسابك البنكي إلى الرقم التالي: [رقم محتال].

LS: Logos and Appealing to authority

The way the request for personal information is worded makes it appear like the victim needs to do it to get the prize. The formal tone makes it seem more real.

-هذه الفرصة متاحة لفترة محدودة، فلا تضيعها!

LS: Pathos and Framing

Making the victim feel like they need to move quickly because they are afraid of missing out on the chance makes it harder for them to think critically.

LS: Repeating" win "and" prize "in the message.

3- رسالة احتيال من شركة توظيف وهمية

-الموضوع: فرصة عمل ذهبية براتب ممتاز!

LS: Framing and Pathos

The phrase "golden job opportunity" makes the offer seem very precious and hard to find, which makes the reader want to act quickly. When you talk about a "excellent salary," it makes people greedy and excited.

-شركة دولية كبرى تبحث عن موظفين للعمل عن بُعد براتب شهري يبدأ من 2000$.

LS: Appealing to authority

Adding the phrase "major international company" makes the message look more trustworthy by giving it fake legitimacy. A large wage and the chance to work from home make the offer appealing to a lot of people.

-لا توجد خبرة مطلوبة، فقط سجل الآن عبر الرابط التالي: [رابط مزيف]

LS: Logos and Pathos

Saying that no experience is needed makes the job seem easy and open to everyone, which makes the victim respond quickly without checking to see if it is real. The word "now" makes things seem urgent.

-يرجى دفع رسوم تسجيل بقيمة 50$ لتأكيد طلبك.

LS: Logos and Framing

Calling the payment a "registration fee" mislead the victim into thinking it's a normal part of the process, but it's really a scam.

المقاعد محدودة! -

LS: Pathos and Framing

Making something seem scarce makes the victim feel like they have to act quickly because they are afraid of missing out on the chance.

4ـ رسالة احتيال اختراق حسابات

الموضوع: حسابك مهدد بالحذف! -

LS: Ethos
Acting like you're from the platform.
LS: Pathos and Framing
Beginning with a threatening phrase makes the victim feel scared and urgency, which makes them act quickly to protect their account.

مرحبًا، -

LS: Flattery

Using a generic welcome helps the message seem more formal and welcoming, which makes it look more real.

لقد تلقينا بلاغًا عن انتهاك حسابك لسياسات المنصة. -

LS: Appealing to authority and Framing

Using the words "report" and "policy violation" makes it sound like an official group is watching accounts, which makes the victim feel like they might have done something wrong and gives the mistaken sense that they are credible.

إذا كنت تعتقد أن هذا خطأ، يرجى تأكيد هويتك فورًا عبر الرابط التالي: [رابط مزيف]. -

LS: Pathos and Logos

Offering a "verification" option lets the victim believe they can fix the problem. Making them act without wondering whether the message is real. The word "immediately" makes things more urgent.

إذا لم تقم بالتأكيد خلال 24 ساعة، فسيتم تعطيل حسابك نهائيًا. -

LS: Pathos and Framing

Setting a deadline adds mental stress, which makes the victim respond quickly out of fear of losing their account for good.

5ـ رسالة احتيال الفوز بعمرة مجانية

الموضوع: فرصة ذهبية للفوز بمسابقة العمرة -

LS: Framing and Pathos

The phrase "golden opportunity" makes the offer sound like a once-in-a-lifetime chance that is very precious. Linking it to an Umrah trip plays on religious feelings, which makes the victim more likely to believe the message.

Hala A Hamad Alobeidy ألف مبروك! -

LS: Ethos

Using the person's name makes it feel more personal.

LS: Framing and Pathos

By using the recipient's name and adding a personal congratulations, the message feels more real and direct, which makes it more likely that the person would believe and respond.

أنت الفائز الثاني في المسابقة.-

LS: Social proof and Framing

Saying that there are more than one winner makes it seem like the contest is real. Using the word "second" makes it seem like the procedure is planned and not random.

تم الدخول اليوم إلى موقع المسابقة لنأخذ رقمك الذي من المفترض أنك سجلته لكي نتصل بك ولكن بحثنا-
عن رقمك داخل الموقع وللأسف لم يظهر لنا رقمك للمرة الثانية.

LS: Logos and Appealing to authority

Claiming to have access to the contest database and doing a "search" makes it seem more real than it is. Telling the victim again that the number was not discovered for the "second time" puts psychological pressure on them.

لماذا هذا التأخير في تسجيل رقمك؟ -

LS: Pathos and Framing

The question indirectly accuses the victim, making them feel guilty and encouraging them to act quickly so they don't lose the prize.

Hala A Hamad Alobeidy فلا يتبقى فائز غيرك لم يستلم المنحة المقدمه له -

LS: Pathos

Saying that the victim is the last remaining winner makes them feel special and urgent, which makes them want to act quickly.

فالرجاء تسجيل رقم هاتفك مرة أخرى إذا كنت قد سجلت مسبقًا! أو يمكنك قم بتسجيل رقم هاتف أحد -
أفراد أسرتك والذي يكون متاحًا حتى نتمكن من الاتصال بك على مدار اليوم

LS: Framing and Logos

This request seems acceptable, but the underlying goal is to get personal information. If you ask for a family member's number, you are more likely to get more information.

ومبارك عليك الفوز بالمنحة المقدمة له بواسطة DS2PLC0TS2-

LS: Appealing to authority

Adding a code or an organization name, even if you don't know what it is, makes the communication look more official and gives it a false impression of validity.

-طريقة التسجيل الصحيحة: انقر على الرابط أدناه [رابط مزيف].

LS :Pathos and Framing

A direct call to action after an emotional message makes it more likely that the victim will do what you want without thinking.

LS: Repetition: Mentioning the name more than once

.

6- رسالة احتيال الفوز بالحج

-الموضوع: أسماء الفائزين بمسابقة الحج

LS :Pathos and Framing

Linking the message to Hajj plays on religious feelings, which makes the person more inclined to trust it. The phrase "winners" makes it seem like there is a real award.

Hala A Hamad Alobeidy :1

Waled ABo Aeta :2

3: مصطفي حلمي

4: زيد محمد

LS: Ethos

Use names to make it seem authentic.

LS :Social proof and appealing to authority

Listing more than one name makes it look like the news is authentic because it looks like other announcements. Using Arabic names that are widespread makes the message feel more real.

-يجب عليكم تسجيل رقمكم من خلال موقعنا الالكتروني بالأسفل [رابط مزيف].

LS: Logos, Pathos and Framing

The word "you must" makes the person feel like they have to do something, which makes them move rapidly. Adding "our website" gives the message a sense of authenticity, making it seem more authoritative.

7- رسالة احتيال البنك والمصارف

-الموضوع: بطاقتك المصرفية مهددة بالحظر

LS: Pathos and Framing

The term "at risk" makes the person feel like they are in danger, which makes them act immediately without checking to see if the message is real.

-عزيزي العميل،

LS: Ethos

Use" Dear customer "to reinforce formality.

LS: Appealing to authority and Flattery

Using a formal and polite address like "Dear customer" makes the message appear more credible and as if it is coming from an official source.

-لقد تم حظر بطاقتك المصرفية مؤقتًا بسبب نشاط غير معتاد.

LS: Pathos and Framing

The phrase "unusual activity" makes people anxious and scared, which makes them think their card might be compromised and makes them more likely to act right away.

- يرجى تحديث بياناتك فورًا عبر الرابط التالي

LS: Logos and Framing

By framing "updating details" as a logical solution, the victim is led to believe that it is required to regain access to their account, but in fact the goal is to steal personal information.

ـ لتجنب إيقاف الحساب نهائيًا: [رابط مزيف].

LS: Pathos

The threat of permanent suspension makes the recipient feel urgent and scared, so they act immediately without considering whether the communication is real.

8- رسالة احتيال سرقة حساب واتساب

-الموضوع: تأكيد هوية واتساب

LS: Framing and appealing to authority

The word "identity verification" suggests a possible security danger, which makes the person who gets the message reply promptly. When you say "Whats App," it makes the message seem official.

-مرحبًا، نحن فريق دعم واتساب.

LS: Ethos

Claims to be from WhatsApp support.

LS: Flattery and appealing to authority

Claiming to be from the "WhatsApp support team" makes the message seem more official, which makes the person who gets it more likely to believe it is real.

-لاحظنا محاولة تسجيل دخول غير مصرح بها إلى حسابك.

LS: Pathos and Framing

The word "unauthorized login attempt" makes people scared and worried since it makes them think their account is in danger and pushes them to act right away.

-لتأكيد هويتك، يرجى إرسال رمز التحقق الذي وصلك عبر الرسائل خلال 10 دقائق

Ls: Logos

The 10-minute deadline makes the victim feel like they have to act immediately without thinking about the request. It seems like asking for a "verification code" is a smart security move, but it's really just a way to steal the account.

-وإلا سيتم إيقاف حسابك.

LS: Pathos and Framing

The fear of account suspension puts greater mental pressure on the victim, making them more likely to do what the message says without checking to see whether it is real.

LS: Repetition: Repeating the threat of publication.

9- رسالة احتيال باسم شركات التوصيل

-الموضوع: استلام طرد الطلبية

LS: Ethos

pretending to be from a delivery company.

LS: Framing

The phrase "Package Delivery Confirmation" makes it sound like the person getting the package is expecting it, which makes them act without questioning the message.

-تم شحن طلبك بنجاح،

 LS: Social proof and Appealing to authority

 This sentence makes it seem like the shipment is legitimate. The formal tone makes the message seem real and legitimate.

- ولكن هناك رسوم جمركية لم يتم دفعها.

LS: Pathos and Framing

When you say "customs fees," it makes the person worry that they may lose their box, which makes them more likely to act right away.

- يرجى سداد المبلغ (5.99 دولار) عبر هذا الرابط لاستلام الطرد الخاص بك: [رابط مزيف]

LS: Logos

The tiny charge of $5.99 makes the request seem acceptable and lowers suspicion. Making payment depend on package delivery makes people feel urgency and afraid of losing the package.

10- رسالة احتيال المساعدات المالية

-الموضوع: مساعدة مالية من منظمة خيرية

LS: Ethos

Explanation: claiming affiliation with a charitable organization.

LS: Appealing to authority and Framing

When you say "financial assistance," it makes the communication seem like it comes from a real and trustworthy source, which lowers suspicion.

-نحن منظمة خيرية نقدم مساعدات مالية للأسر المحتاجة.

LS: Appealing to authority and Social proof

Saying you are a" charity organization "makes you look more trustworthy than you are. The phrase" needy families "appeals to emotions and makes the person more likely to believe the offer.

- لقد تم اختيارك للحصول على دعم بقيمة 500 دولار.

LS: Flattery

Saying that someone has been "selected" makes them feel "special," which makes them more likely to do what you want. When you say a precise quantity, it makes the feeling of exclusivity and urgency stronger.

- يرجى ارسال اسمك ورقم حسابك لاستلام المبلغ فورًا.

LS: Logos & Pathos

The direct request for financial information takes advantage of the recipient's need for money, causing them to neglect logic. The promise of "immediate recipient" makes people feel urgency and like they will get a reward right now.

The data was manually analyzed to identify the linguistic strategies used in the phishing texts. Following the manual analysis, statistical analysis was conducted to determine the percentage of the frequency of each persuasive strategies, such as logos, pathos, etc.

Table (1): Percentage of Frequency of Strategies

Appealing to Authority	Framing	Social Proof	Flattery	Repetition	Logos	Pathos	Ethos	Strategy
14	28	6	8	3	12	25	9	Frequency
13.33 %	26.67 %	5.71 %	7.62 %	2.86 %	11.43 %	23.81 %	8.57 %	percentage

Table (1) shows the percentage of the frequency of the use of each strategy. It also shows that **framing** has the highest frequency (26.67 %), then comes **pathos** of (23.81 %), and the least used is **repetition** of frequency (2.86 %) percentage. While the other strategies achieved different but almost similar percentages.

The analysis of variance table below demonstrates that there are significant differences between the language strategies. This was done with the SPSS25 tool.
.

Table (2): ANOVA analysis of variance for the strategies used in fraudulent texts in the manual analysis

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	56.088	7	8.013	13.385	.000
Within Groups	43.100	72	.599		
	99.188	79			

Table (2) shows that the significant value Sig. for between groups is 0.000, which is less than 0.05. This shows that there are significant differences across the languages used.
 Appendix (1) has a table that shows that the Pathos and Framing strategies were the only ones that made this significant difference. The Sig. value was less than 0.05, indicating the presence of significant differences. There is also not a significant difference between the two strategies listed above. Repetition is only different from Appealing to Authority, with a value of 0.043.

3.3.2. Strategic impact on recipient:

Statistical analysis was conducted using SPSS software after data were collected through a Google Forms questionnaire, which included the ten deceptive texts also employed in the manual analysis. Respondents were asked to indicate whether they were convinced, unconvinced, or neutral regarding each text (see Appendix 2). The validity and reliability of the questionnaire were assessed using Cronbach's alpha (α), which produced a value of 0.73, indicating that the instrument is valid and reliable (see Appendix 3).

The results of the Google form questionnaire are listed ,**see appendix (4)** that shows the features of the texts according to the tested individuals' view and shows that most of the messages have a response intensity more than (67%)

which means that people are convinced by these texts, except some texts which show lesser percentages.

Each of these texts includes specific strategies from among the eight linguistic strategies. **Table (3)** shows the strategies included in the messages used, along with the percentage of conviction and lack of conviction of the participants in the survey.

Table (3): The Percentage of Strategies Employed in the Questionnaire Texts

Appealing to Authority	Framing	Social Proof	Flattery	Repetition	Logos	Pathos	Ethos	Level	Strategies / Texts
43.3%	0	0	48.0%	40.0%	33.3%	0	40.0%	unconvinced	
23.3%	0	0	40.0%	30.0%	10.0%	0	20.0%	neutral	Bank fraud Texts
33.3%	0	0	12.0%	30.0%	56.70%	0	40.0%	convinced	
0	30.00%	0	30.0%	33%	33.3%	0	23.3%	unconvinced	
0	12.00%	0	6.7%	7%	16.7%	0	6.7%	neutral	Prize Winning Scam Texts
0	58.00%	0	63.3%	60%	50.0%	0	70.0%	convinced	
30.0%	33.3%	0	0	30.0%	26.7%	0	0	unconvinced	Scam Texts from a fake recruitment company
6.7%	6.7%	0	0	6.7%	11.7%	0	0	neutral	
63.3%	60.0%	0	0	63.3%	61.7%	0	0	convinced	
56.7%	0	0	0	43.3%	30.0%		46.7%	unconvinced	
16.7%	0	0	0	6.7%	16.7%		23.3%	neutral	Account hacking scam Texts
26.7%	0	0	0	50.0%	53.3%		30.00%	convinced	
56.7%	0	0	0	0	30.0%	43.3%	46.7%	unconvinced	
16.7%	0	0	0	0	16.7%	6.7%	23.3%	neutral	Free Umrah Winning Scam Texts
26.7%	0	0	0	0	53.3%	50.0%	30.0%	convinced	
0	0	0	0	0	20.00%	31.0%	0	unconvinced	
0	0	0	0	0	23.30%	24.1%	0	neutral	Hajj winning scam Texts
0	0	0	0	0	56.70%	44.8%	0	convinced	
0	0	0	0	0	36.7%	31.1%	0	unconvinced	
0	0	0	0	0	20.0%	18.9%	0	neutral	Bank and banking fraud Texts
0	0	0	0	0	43.3%	50.0%	0	convinced	

0	52.2%	0	0	0	0	66.7%	60.0%	unconvinced	WhatsApp account theft scam Texts
0	26.1%	0	0	0	0	3.3%	13.3%	neutral	
0	21.7%	0	0	0	0	30.0%	26.7%	convinced	
0	0	36.7%	0	33.3%	0	0	46.7%	unconvinced	Fraudulent Texts from delivery companies
0	0	26.7%	0	10.0%	0	0	23.3%	neutral	
0	0	36.7%	0	56.7%	0	0	30.0%	convinced	
27.30%	0	0	33.3%	30.0%	33.3%	0	0	unconvinced	Financial Aid Scam Texts
18.20%	0	0	13.3%	20.0%	13.3%	0	0	neutral	
54.50%	0	0	53.3%	50.0%	53.3%	0	0	convinced	
37.3%	37.5%	40.0%	36.5%	33.3%	30.0%	37.9%	42.2%	unconvinced	Sum Total
17.3%	12.5%	16.7%	18.8%	16.7%	15.4%	14.2%	16.7%	neutral	
45.3%	50.0%	43.3%	44.7%	50.0%	54.6%	47.9%	41.1%	convinced	

Table 3 indicates that the conviction rate for all fraudulent texts is generally higher than the non-conviction rate. The overall data reveal that the Logos strategy achieved the highest conviction rate (54.6%), whereas the Ethos strategy recorded the lowest rate (41.1%). The remaining strategies exhibit conviction rates ranging between 43% and 50%.

Table (4): ANOVA analysis of variance for the strategies used in fraudulent texts in the questionnaire form

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	8.032	7	1.147	1.385	.208
Within Groups	983.262	1187	.828		
Total	991.294	1194			

Table 4 above shows that there are no substantial differences among the strategies. The significance value (sig) exceeds 0.05, indicating that the strategies used in the questionnaire do not differ significantly from one another. This does not imply that they lack influence on the respondents; rather, it suggests that no single strategy exerts an effect that is distinct from the effects of the other strategies.

3.3.3.The Comparison Between the Results of Section One and Two

To compare the results of the first section, which showed significant differences among the manually selected strategies, with those of the second section, where no significant differences were observed among the linguistic strategies used in the questionnaire (the same strategies employed in the manual analysis), a comparison was conducted. A distinction is evident between the results in Table 2 and Table 4. The two tables demonstrate that, in the manually selected texts, one strategy exhibits a different level of effect compared to the others. This

indicates that certain strategies have a greater impact relative to others when manually chosen.

4. Findings and conclusion

The manual statistical analysis in this study indicates that framing (26.67%) and pathos (23.81%) are the most frequently employed strategies, whereas repetition (2.86%) is the least used. In contrast, the technical statistical analysis of participants' responses reveals a different pattern, showing that logos exerts the greatest influence on the participants. This mismatch suggests that the strategies most frequently used by phishing attackers are not necessarily the strategies regarded most persuasive by the participants. It also reflects the individuals' tendency of logic and reasoning when judging the reliability of texts, while the phishers tend to use the strategies that trigger emotions to create a sense of fear, urgency or moral responsibility. The data also show the attackers' reliance on religious themes, like Hajj and Umrah, and moral frames, like the financial aids. Such texts although show moderate rates of persuasiveness, but reflect individuals' sensitivity to religious and moral framing.

These findings highlight the complexity of linguistic manipulation, as multiple strategies may be employed within a single deceptive text. They underscore the necessity of a dual-layered approach to understanding phishing messages, considering both linguistic styles and their perceptual effects on recipients. The analysis of participants' responses reveals gaps in public awareness, emphasizing the importance of linguistic literacy in digital security and the need for awareness programs to address the linguistic mechanisms that convey trust, empathy, moral responsibility, or perceived logical reasoning.

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Multiple Comparisons
Dependent Variable: The number of manual strategies
Tukey HSD

(I) Strategies	(J) Strategies	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Ethos	Pathos	-1.60000*	.34601	.000	-2.6802	-.5198
	Logos	-.30000	.34601	.988	-1.3802	.7802
	Repetition	.60000	.34601	.665	-.4802	1.6802
	Flattery	.10000	.34601	1.000	-.9802	1.1802
	Social Proof	.30000	.34601	.988	-.7802	1.3802
	Framing	-1.90000*	.34601	.000	-2.9802	-.8198
	Appealing to Athority	-.50000	.34601	.833	-1.5802	.5802
Pathos	Ethos	1.60000*	.34601	.000	.5198	2.6802
	Logos	1.30000*	.34601	.008	.2198	2.3802
	Repetition	2.20000*	.34601	.000	1.1198	3.2802
	Flattery	1.70000*	.34601	.000	.6198	2.7802
	Social Proof	1.90000*	.34601	.000	.8198	2.9802
	Framing	-.30000	.34601	.988	-1.3802	.7802
	Appealing to Athority	1.10000*	.34601	.043	.0198	2.1802
Logos	Ethos	.30000	.34601	.988	-.7802	1.3802
	Pathos	-1.30000*	.34601	.008	-2.3802	-.2198
	Repetition	.90000	.34601	.173	-.1802	1.9802
	Flattery	.40000	.34601	.941	-.6802	1.4802
	Social Proof	.60000	.34601	.665	-.4802	1.6802
	Framing	-1.60000*	.34601	.000	-2.6802	-.5198
	Appealing to Athority	-.20000	.34601	.999	-1.2802	.8802
Repetition	Ethos	-.60000	.34601	.665	-1.6802	.4802
	Pathos	-2.20000*	.34601	.000	-3.2802	-1.1198
	Logos	-.90000	.34601	.173	-1.9802	.1802
	Flattery	-.50000	.34601	.833	-1.5802	.5802
	Social Proof	-.30000	.34601	.988	-1.3802	.7802
	Framing	-2.50000*	.34601	.000	-3.5802	-1.4198
	Appealing to Athority	-1.10000*	.34601	.043	-2.1802	-.0198
Flattery	Ethos	-.10000	.34601	1.000	-1.1802	.9802
	Pathos	-1.70000*	.34601	.000	-2.7802	-.6198
	Logos	-.40000	.34601	.941	-1.4802	.6802
	Repetition	.50000	.34601	.833	-.5802	1.5802
	Social Proof	.20000	.34601	.999	-.8802	1.2802
	Framing	-2.00000*	.34601	.000	-3.0802	-.9198
	Appealing to Athority	-.60000	.34601	.665	-1.6802	.4802
Social Proof	Ethos	-.30000	.34601	.988	-1.3802	.7802
	Pathos	-1.90000*	.34601	.000	-2.9802	-.8198
	Logos	-.60000	.34601	.665	-1.6802	.4802
	Repetition	.30000	.34601	.988	-.7802	1.3802
	Flattery	-.20000	.34601	.999	-1.2802	.8802
	Framing	-2.20000*	.34601	.000	-3.2802	-1.1198
	Appealing to Athority	-.80000	.34601	.302	-1.8802	.2802
Framing	Ethos	1.90000*	.34601	.000	.8198	2.9802
	Pathos	.30000	.34601	.988	-.7802	1.3802
	Logos	1.60000*	.34601	.000	.5198	2.6802
	Repetition	2.50000*	.34601	.000	1.4198	3.5802
	Flattery	2.00000*	.34601	.000	.9198	3.0802
	Social Proof	2.20000*	.34601	.000	1.1198	3.2802
	Appealing to Athority	1.40000*	.34601	.003	.3198	2.4802
Appealing to Athority	Ethos	.50000	.34601	.833	-.5802	1.5802
	Pathos	-1.10000*	.34601	.043	-2.1802	-.0198
	Logos	.20000	.34601	.999	-.8802	1.2802
	Repetition	1.10000*	.34601	.043	.0198	2.1802
	Flattery	.60000	.34601	.665	-.4802	1.6802
	Social Proof	.80000	.34601	.302	-.2802	1.8802
	Framing	-1.40000*	.34601	.003	-2.4802	-.3198

*. The mean difference is significant at the 0.05 level.

Appendixes

Appendix (1):Comparison between strategies

Appendix (2): Likert Scale of Recipients' Answers

Unconvinced	Neutral	Convinced
1	2	3

Appendix (2): shows the answers was transformed into quantitative data depending on **Likert Scale** which are used in questionnaire form**.**

Appendix (3):Means of Likert Scale

Convinced	Neutral	Unconvinced	Level
3-2,32	2,31 – 1,66	1,65-1	Mean

To determine the level at which the deceptive texts fall **appendix (3)** represents the means depending on **Likert Scale.**

Appendix (4): Description of Study Texts

Response Intensity %	Coefficient Of variation %	Standard deviation	Mean	Unconvinced (1)	Neutral (2)	convinced (3)	Texts
64.83	44.85	0.87	1.94	59	35	51	Bank fraud Texts
				22.3	13.2	19.2	Percentage
		0.91	2.31	**36**	**11**	**73**	Prize Winning Scam Texts
76.94	39.23			**13,6**	**4,2**	**27,5**	Percentage
		0.90	2.33	**35**	**11**	**74**	Scam Texts from a fake recruitment company
77.50	38.70			**13,2**	**4,2**	**27,9**	Percentage
		0.92	1.96	**53**	**19**	**48**	Account hacking scam Texts
65.28	47.00			**20**	**7,2**	**18,1**	Percentage
72.38	42.72	0.93	2.17	**75**	**24**	**111**	Free Umrah Winnin

							g Scam Texts
				28,3	9,1	41,9	Percentage
75.56	37.10	0.84	2.27	15	14	31	Hajj winning scam Texts
				5,7	5,3	11,7	Percentage
71.94	41.18	0.89	2.16	39	23	58	Bank and banking fraud Texts
				14,7	8,7	21,9	Percentage
56.30	52.24	0.88	**1.69**	53	12	25	WhatsApp account theft scam Texts
				20	4,5	9,4	Percentage
67.41	44.46	0.90	2.02	35	18	37	Fraudulent Texts from delivery companies
				13,2	6,8	14	Percentage
74.72	39.22	0.88	2.24	35	21	64	Financial Aid Scam Texts
				13,2	7,9	24,2	Percentage

Appendix (4) illustrates the characteristics of the texts utilised, which reveals how strongly or weakly the survey participants believed in them.

Frequencies of respondents' responses to the survey (convinced, neutral, unconvinced) along with the percentages for each type of text. We find that the numbers are unequal because each type of text includes an unequal number of texts. Most fraudulent texts have a response rate of more than 67%, meaning that most of the survey participants are convinced by the texts they receive, meaning that they fall victim to fraudulent texts, except for the types of texts that have a neutral effect, and those texts are (bank fraud messages, account hacking fraud messages, WhatsApp account theft fraud messages) which achieved arithmetic averages of (1.94, 1.96, 1.69) with a response intensity of (64.83, 65.28, 56.30)%, and all of their values are less than 67%.