

Video Games Localization into Arabic: Gamers' Reactions to Localizing PUBG and Free Fire

Shatha Jarrah, Saleh Al-Salman, and Ahmad S Haider*

Abstract: The Middle East and North Africa (MENA) region has an active gaming community, with Arab gamers being reliant on games produced in Europe, America, and Japan due to the lack of significant game production companies in the MENA region. This study explores the gamers' reactions to the localization process of two video games, namely PUBG and Free Fire. For data collection purposes, a five-point Likert scale questionnaire that consisted of 18 items and six constructs, namely need for subtitled games, technical aspects, language issues, language preference, attitudes to game localization, and future actions and recommendations, was designed to elicit the reactions of 112 participants. Upon analyzing the responses, the findings showed that the better the technical aspects and language issues of the games' performance, the more positive participants' attitudes to game localization. The study recommends that further research could be conducted on the localization of video games with different themes into Arabic.

Key words: localization; video games; PUBG; Free Fire; Audio Visual Translation (AVT)

1 Introduction

Translation is an intellectual process where the meaning of a given unit of discourse is rendered from one language to another.

Nida and Taber^[1] argued that translation consists of reproducing the closest equivalence of the source language message in the target language, foremost in terms of meaning and secondly in terms of style. Catford^[2] proposed that translation aims to replace textual material in the source language with equivalent textual material in the target language. Textual material denotes any written or printed material such as books, newspapers, magazines, or online content. The rapidly growing demand for Translation Studies (TS) has put

audiovisual translation at the forefront of all translation genres^[3, 4].

According to the LAI Global Game Service, the Middle East and North Africa (MENA) has the world's most active gaming community. Arab gamers, however, remain reliant on games made in Europe, America, and Japan due to the lack of significant game production companies in the MENA region. In the gaming industry, in particular, the Middle East is acknowledged as one of the best and most stable places to invest due to the market's high demand for contemporary games, whether they are played on a PC, a console, or a mobile device. It is important to note that 22 countries in the Middle East consider Arabic their mother tongue^[5]. As a result, game developers must adapt their applications to suit Arabic speakers and Arabic video game culture to access the sizable video game market in West Asian nations. One specific example is the Arabic video game culture's rejection of any games that feature or heavily allude to violence^[6]. Noticeably, video games are designed and developed with the Western world in mind. Therefore, any misalignment in the cultural context can affect Arabic gamers' attitudes toward the games. Al-

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Batineh^[7] discussed the “cultural challenges that arise when localizing video games into Arabic, such as how to navigate nudity, profanity, and alcohol”. Video games must consequently undergo a careful, accurate, and precise translation process reflecting cultural refinement to appeal to Middle Eastern users.

The largest game publisher in the world by revenue, Tencent Games from China, set its regional headquarters in Dubai Internet City in 2019. The size of the international video game market was estimated at 151.06 billion US dollars in 2019. The worth of the gaming sector in the Middle East was 4.8 billion US dollars, around 3.2% of the global value. However, it is necessary to point out that the Arab region has recently witnessed unheard-of attempts to develop and promote its gaming sector. Video game localization emerged in the mid-1990s when an Arab fan named Adnan collaborated with Rinco (Ramar International), a distributor from Taiwan, China, and Nintendo, a Japanese video game developer, on a translation of Captain Majed. In response to the development of the Arab video game market, some video game developers are capitalizing on this growth by offering Arabic localization of their video games.

Mangiron^[8] argued that video game localization contains forming a suitable game for sale in the territory and in relation to technology, language, culture, law, and the market process. Video game developers believe in outsourcing their Arabic localization needs. They provide sellers or resellers with translated video game language content in text or spreadsheet formats without good gameplay context^[9]. This is because Arabic video game localization is under-researched in the Arab world. According to Al-Batineh and Alawneh^[10], the localization of video games in Arabic is limited, where researchers either examine a single video game and its different localization issues or investigate different games by considering the transfer of their linguistic assets.

Examining how Arab gamers respond to the localization of video games into Arabic is important for several reasons. These include: understanding market demand, guaranteeing cultural sensitivity, and enhancing user experience. The gaming market in the Arab world is expanding, and game publishers and developers can decide if it is worthwhile to engage in translation efforts by knowing the demand for localized

games. Arab gamers' responses might offer information about their tastes and wants, which can assist game developers in creating future titles and increasing their market share. When localizing video games, it is important to take cultural sensitivity into consideration in addition to language translation. By observing Arab gamers' responses, developers may make sure that the content is sensitive to cultural norms and appropriate, avoiding any offensive or improper stuff that might turn off the intended audience. Localizing video games into Arabic can enhance the playing and enjoyment of the game for Arab gamers. By looking at how Arab players behave, developers may spot any problems or difficulties that may come during localization, such as linguistic or cultural obstacles, and fix them to enhance the overall user experience.

The present study assesses the quality of Arabic localization in two video games, namely PUBG and Free Fire. To this end, it addresses the following question:

What are the gamers' reactions to the Arabic localization of PUBG and Free Fire?

2 Review of Related Literature

Currently, the translation of video games is in demand as it allows gamers from different cultural, social, and linguistic backgrounds to enjoy their favorite video games, providing them with the same game experience. This section discusses relevant studies in the field of video game localization. Mangiron^[8] presented a small-scale exploratory investigation regarding the acquisition of subtitles in video games utilizing user tests with eye-tracking technology and a survey. The study aimed to determine the type of subtitles which is the most appropriate for video games based on their interactive nature and users' choices. It also stressed the need to develop the best methods and standards of subtitling for this emerging digital medium, which would enhance game convenience and the gaming experience for the deaf and hard of hearing gamers, among others. In the same vein, Mahasneh and Kishek^[11] investigated the video game Tomb Raider's translation operations. First, they looked at how far the translation of a few critical linguistic components in a previous video game may be necessary to incorporate what the term “localization” actually implies. Then, they explained and evaluated the use of various different-

perspective translation methods in determining the scope of the translation and its intended audience.

Relatedly, Al-Mazrooa^[12] examined the most popular titles chosen from the Imagine Games Network (IGN) 2014 best Arabic localization prize: Call of Duty Advanced Warfare, Assassin's Creed Unity, PES 2015, and FIFA 2015. The results showed that the Arabic localization of the identified titles ranged from using only Modern Standard Arabic (MSA) for the first two titles to combining MSA with regional dialects for the last two. The sports titles were emphasized because regional languages in video game localization demonstrate a more significant appeal to Arab gamers. Her study explained how localizing to a developing market differs from many practices discussed in the localization literature. Interestingly, the very context of Arabic localization provides a fertile ground for relocating and critically evaluating Venuti's theory of foreignization and domestication and the debate surrounding it regarding the tendency to retain foreign aspects of the original text or replace all unfamiliar elements with domestic variants to reduce the foreignness of the source text and help the target reader approach it with ease and familiarity^[13].

Similarly, Kudła^[14] surveyed the reactions of a dedicated group of Polish gamers regarding the best localization scope, the factors which influence their preference, the solutions which characterize an excellent localization, and the ones that localizers should avoid. According to the surveyed gamers, the typically arising mistakes in Polish video game localizations were: voice-acting strange intonation, the use of incorrect Polish equivalents of single English words and phrases, and the variance between Polish subtitles and voice acting. Localization movements for video games have aimed to translate and, in some cases, adopt video games in various languages and situations. In the Arab world, however, localization is still at its beginnings.

Additionally, Al-Batineh and Alawneh^[10] investigated the gaps in Arabic video game localization studies by digging deep into various video games localized into Arabic and assessing the technical, linguistic, and societal issues in them. The Arabic script, video game variables, and subtitling conventions were among the technical problems. On the other hand, the linguistic challenges included the translation of proper

names and Non-Player Characters (NPC) titles into Arabic and Arabic video game vocabulary and acronyms. The researchers also discussed how to deal with culture-bound expressions, such as swearing, while localizing video games into Arabic.

Although several studies examined the translation of games across languages, including Arabic and English, little attention has been paid to similar studies in the context of PUBG and Free Fire. Therefore, this study fills a research gap in this particular domain.

While the authors rightly acknowledge the existence of other papers looking into Arabic game localization, they have clearly brought to light that a sound assessment of video game localization in Arabic can be best realized by mapping it against the six key constructs of (1) need for subtitled games, (2) technical aspects, including font size and color in the localized version, amount of text displayed on the screen, and the game interface, (3) language issues, including spelling errors, grammatical errors, and lexical semantic errors, (4) language preference (game's original language or the localized one), (5) attitudes to game localization, and (6) future action and recommendations. These subclasses are insightful enough for researchers to draw on when studying and investigating game localization in different genres, such as simulation and sports, entertainment, puzzles and party games, role-playing games, action games, and strategy games. It is for all of the above reasoning that the present research is well motivated, and the findings and conclusions are generalizable as they are based on quantitative data analysis methods. Such conclusions derive from a thorough analysis of the participants' responses to six constructs measuring and empirically assessing the quality of game localization into Arabic, highlighting the scientific significance of the paper not only for AVT researchers but also for interdisciplinary research in the humanities and social sciences.

3 Methodology

For the purpose of this study, a questionnaire was used to elicit gamers' reactions toward the Arabic localization of PUBG and Free Fire (see Appendix). The questionnaire was divided into two sections: (1) demographic information and (2) an 18-item questionnaire of 6 constructs. A five-point Likert scale was used to determine the participants' degree of

agreement: (1) strongly agree; (2) agree; (3) uncertain; (4) disagree; and (5) strongly disagree. Since the study is concerned with Arab gamers and the theme of the two video games is battle royale, the age of the target sample group was between 10–30 years.

3.1 Why PUBG and Free Fire?

The choice of PUBG and Free Fire, in particular, to champion this study derives from a number of elements that lend support to their dominance as catalysts in the modern-day video gaming industry. To begin with, PUBG is a well-known video game and one of the world's most downloaded games for its unique battle mode royale. The game is viral and took off in Arab countries, unifying all players by engaging them in direct contact over social, console, PC, and smartphone worlds. This is where PUBG ARAB (the team) started its journey in 2018 with active players and gaming professionals to shape the future of the game in the Arab world. According to Statista.com, by the end of 2021, PUBG has sold more than 75 million versions on personal computers and game consoles, making it the top-selling video game on PC and Xbox and the fifth best-selling video game every time. Furthermore, the global version of PUBG Mobile has over 1 billion downloads and has earned more than 8.42 billion US dollars on portable devices, which make it the fourth top mobile game. In this regard, the highest number of active players, 3.24 million, was recorded in January 2018.

Similarly, Free Fire, like PUBG, is a battle royale game. The game is only available on iOS and Android. However, the game had millions of users just a few months after its release. This is primarily due to its addictive nature, and it can be played smoothly on phones in the mid-range. According to Esports, the most downloaded game in the world in 2019 was Free Fire. However, Google Play Store rewarded Free Fire the “Best Popular Vote Game” in 2019. According to VentureBeat (the leader in covering transformative technology), it had 80 million daily active users as of May 2020.

The fact that the current piece of research has exclusively targeted PUBG and Free Fire as two major battle-mode royale games does not render the findings of this study conclusive. Therefore, localization specialists and researchers can investigate video game localization with various genres and types. This can

cover a massive research ground in the natural sciences, applied science, humanities and social sciences, the arts, among others. Comparative studies between areas of specialization and languages on cases of localization may be another rich area of investigation. This renders the present study both well-motivated and apt to boost the game localization strand of the video games industry at large.

3.2 Questionnaire validity and reliability

After consulting a number of relevant questionnaires, the researchers designed the research instrument to be used in these studies^[15–17]. To determine validity, the questionnaire was sent to a jury of three experts in audiovisual translation for their comments. Their feedback and suggestions were incorporated accordingly before administering the questionnaire. As mentioned earlier, the questionnaire consisted of two parts. The demographic part aimed to collect some information about the participants' gender, years of playing video games, education, medium to play video games, and time spent playing games daily. The second part of the questionnaire consisted of 18 items and six constructs. These are: need for subtitled games, technical aspects, language issues, language preference, attitude to game localization, and future actions and recommendations, with each construct consisting of three items.

For the questions in language preference, and attitudes to game localization sections, the items are in favor of the localized game. Affirmation is typically preferable to negation when creating questionnaires. Negative questions ask the respondents to disagree with or deny a statement, whereas affirmative questions ask the respondent to concur or confirm a statement. The following are possible justifications for choosing affirmative queries. First is clarity, where positive inquiries are frequently more understandable and clearer than negative questions. Negative inquiries might be difficult to understand and take more mental effort to process. Second is preventing bias by encouraging respondents to respond differently from what they might have done in responding to an affirmative question. Negative questions have the potential to induce bias in survey results. Third is consistency, where positive questions are more in line with the survey's overall tone. Affirmative questions are consistent with this goal because surveys are often

created to collect data and views from respondents. Fourth is positive tone, where the positive tone of affirmative questions can make for a more enjoyable and engaging survey experience for the responder.

In fact, “agreeing” with the statement is a vote and testimony in support of localization and does not contradict it. In other words, the reason and the preference for language and game localization are interrelated and lead to the same conclusion. The same is true about “disagreeing” which expresses a negative attitude to localization.

3.2.1 Reliability analysis

To ensure that the 18 statements were clear, the researchers distributed the questionnaire to 22 participants as a pilot study to determine reliability. In addition, reliability analysis through Cronbach’s Alpha results and correlation coefficients was conducted (Table 1). In addition, Table 2 shows the results for the 18 statements of the questionnaire and how closely they are related to the six subscales.

Table 1 shows that Cronbach’s Alpha coefficient for all variables is equal to 0.912, indicating a high level of reliability of the questionnaire and reflecting a relatively high internal consistency. Concerning the results of each construct, i.e., vocabulary building and recognition, dialect acquisition and understanding, technical issues, linguistic information, attitudes, and

Table 1 Reliability analysis result through Cronbach Alpha results^[18].

Construct	Number of items	Cronbach’s Alpha
Need for subtitled games	3	0.708
Technical aspect	3	0.777
Language issue	3	0.863
Language preference	3	0.857
Attitude to game localization	3	0.842
Future action and recommendation	3	0.876
All variables	18	0.912

Table 2 Normality indicator.

Construct	Skewness	Kurtosis
Need for subtitled games	-0.568	0.728
Technical aspect	-0.419	0.539
Language issue	-0.348	-0.509
Language preference	-0.392	-0.407
Attitude to game localization	-0.496	0.176
Future action and recommendation	-1.155	1.453
All variables	-0.568	0.728

future actions and recommendations, Cronbach’s Alpha values were equal to 0.708, 0.777, 0.863, 0.857, 0.842, and 0.876, respectively. A reliability coefficient of 0.70 or higher is considered “acceptable” in social science research^[19].

3.2.2 Normality test

To make sure that the data are normally distributed, the researchers conducted skewness and kurtosis tests, as Table 2 shows.

Table 2 presents the skewness and kurtosis values. The data are considered normally distributed if skewness and kurtosis values lie between -3 and $+3$ ^[20]. The values obtained in Table 2 are within the above-mentioned range, proving that the data are normally distributed.

3.2.3 Confirmatory factor analysis

To verify the factor structure of the set of observed variables (the factor loadings), Confirmatory Factor Analysis (CFA) is applied. Composite Reliability (CR), convergence validity, and convergent validity are assessed. The results are presented in Table 3. Discriminant validity is assessed through the Heterotrait-Monotrait ratio of correlations (HTMT) analysis, the results are presented in Table 4.

Table 3 shows that all the items’ loadings range from 0.608 to 0.835, as the recommended factor loading is 0.50 or higher, and ideally 0.70 or higher, the results are accepted.

Convergent validity can be assessed in factor loadings by Composite Reliability (CR) and Average Variance Extracted (AVE). The results show that composite reliability values ranging from 0.756 to 0.792 are greater than 0.7, reflecting good internal consistency. The results also show that the AVE values ranged from 0.509 to 0.561, which are greater than 0.50 (the cut-off value justifies the use of the construct). Therefore, the entire latent variables have met the standard for establishing convergent validity^[21].

Table 4 shows that all HTMT correlations obtained values are less than 0.85, indicating that there are no discriminant validity problems. According to Henseler et al.^[22], HTMT values below 0.90 establish discriminant validity between reflective constructs. Based on the results, there are no collinearity problems among the latent constructs (multicollinearity) and no overlapping items from the respondents’ perception of

Table 3 Confirmatory factor analysis results (factor loading).

Latent variable	Indicator	FL	FLS	AVE (> 0.50)	CR (> 0.70)
Need for subtitled games	NSG1	0.827	0.684	0.514	0.757
	NSG2	0.608	0.370		
	NSG3	0.698	0.487		
Technical aspect	TA1	0.814	0.663	0.542	0.779
	TA2	0.669	0.448		
	TA3	0.718	0.516		
Language issue	LI1	0.661	0.437	0.539	0.776
	LI2	0.695	0.483		
	LI3	0.835	0.697		
Language preference	LP1	0.711	0.506	0.523	0.767
	LP2	0.692	0.479		
	LP3	0.765	0.585		
Attitude to game localization	AGL1	0.67	0.449	0.509	0.756
	AGL2	0.749	0.561		
	AGL3	0.719	0.517		
Future action and recommendation	FAR1	0.729	0.531	0.561	0.792
	FAR2	0.813	0.661		
	FAR3	0.7	0.490		

Note: FL = Factor Loading, FLS = Factor Loading Squared, AVE = Average Variance Extracted, and CR = Composite Reliability.

Table 4 HTMT analysis result.

Indicator	NSG	TA	LI	LP	AGL	FAR
NSG	—	—	—	—	—	—
TA	0.730	—	—	—	—	—
LI	0.704	0.782	—	—	—	—
LP	0.125	0.010	0.098	—	—	—
AGL	0.580	0.620	0.654	0.172	—	—
FAR	0.520	0.589	0.645	0.231	0.702	—

the affected constructs.

3.3 Research hypotheses

Research hypotheses are unproven assertions that propose an association or relationship between two or more variables. They are created depending on the study's research question and the body of literature already available. Research hypotheses are crucial for a number of reasons. They help to focus the research on particular factors and relationships by first giving it a defined direction. Secondly, they give researchers a chance to test their hypotheses and assess the reliability of their suggested explanations. This is crucial for expanding scientific understanding and identifying areas that require additional study. Thirdly, hypotheses assist in creating a framework for data analysis by instructing researchers on the kinds of statistical tests and techniques that are suitable for their research.

The process of developing a research hypothesis involves formulating a tentative explanation or prediction for the relationship between the variables. In the current study, we first develop a preliminary hypothesis, which is then improved and changed in light of more research and data analysis.

The current study puts forward four hypotheses.

Hypothesis 1: The demographic data, including gender, education, medium used to play video games, time spent gaming a day, and years playing video games, have affected the gamers' reactions to both PUBG and Free Fire.

Hypothesis 2: The technical aspects have affected the attitudes and future actions and recommendations of the participants.

Hypothesis 3: The language issues have affected the attitudes and future actions and recommendations of the participants.

Hypothesis 4: Language preferences have affected the attitudes and future actions and recommendations of the participants.

To come up with the research hypotheses, a number of previous studies on video game reception were consulted^[23–28]. In this context, O'Hagan^[28] used information from observation, interviews, and a review of the player's game log to assess a gamer's experience

of playing a localized game. The findings revealed that due to cultural variations between the original and recipient cultures, the experience of playing a localized version of a video game could be different from that of playing an original one. The player, for instance, expressed dissatisfaction with the game's lack of cut-scenes or lack of control over camera angles. Similarly, Geurts^[26] surveyed 108 Dutch gamers about their attitudes and preferences. According to their monthly gaming time, gamers were divided into groups ranging from non-players who played for less than two hours to severe players who played for more than 50 hours. Semi-extreme and semi-casual gamers were found to be the most represented groups. More significantly, the players claimed that playing English-language games (as opposed to Dutch-language games) was more engaging, and they preferred to play subtitled rather than dubbed video games. Surprisingly, only a tiny percentage of the players had a positive opinion of the recent increase in game localization into Dutch; a huge majority remained unconvinced, perhaps due to issues with voice acting and translations, among other things.

Interestingly, the above-mentioned studies are directly related and lend support to research Hypothesis 1 (demographic data) of the current study, where time played, and gamers' experience have significantly affected gamer's attitudes and reactions to game localization. Furthermore, the previous studies have most explicitly stressed the importance of technical aspects, i.e., lack of cut-scenes or lack of control over camera angles (Hypothesis 2), language issues (Hypothesis 3), and language preference (Hypothesis 4) in determining gamers' attitudes to game localization (Appendix-Questionnaire).

This was clearly evidenced in Ref. [26] where gamers preferred the English version of the games to the Dutch one, and they also preferred to play the subtitled rather than dubbed games. In addition, technical and language issues of voice acting and translations were in favor of the English version of the games under investigation to the Dutch one (Hypotheses 3 and 4).

Similarly, Fernández-Costales^[25] polled 94 college students on their views on game localization. The fact that men made up most of the participants suggests that male gamers predominate. The participants were divided into three groups based on how often they

played video games: occasionally, frequently, and infrequently. Again, the above findings show the importance of the demographic variables in influencing gamer's attitudes (see Appendix-Questionnaire-Demographic data). Most players found the quality of Spanish-language game localization adequate, and they favored the foreignizing strategy over the translation technique because it kept the game's uniqueness. Additionally, it was discovered that gamers preferred playing original games to anticipating localized ones. Likewise, Puerto^[27] conducted a study examining the characteristics of Spanish video gamers and their attitudes toward and preferences for game localization. The study of the 256 gamers' data revealed that they were between the ages of 21 and 30 and had been playing video games since they were very young, which ties well with Hypothesis 1 of the current study (see Appendix-Questionnaire-Demographic data). They favored Internet games and primarily played computer games. Their favorite choices were action and adventure, role-playing, shooting, and strategic games. They prefer to play games in their original language regardless of the language they are translated into. The gamers also acknowledged that they preferred a localized game that adhered to Spanish linguistic traditions while remaining authentic to the original, which is consistent with Hypothesis 3 of the current study, namely language issues where the linguistic aspects of spelling, grammar, lexicon, and semantics are considered (see Appendix-Questionnaire-Language issues).

In their analysis of the preferences and opinions of 726 French-language gamers, Ellefsen and Bernal-Merino^[23] found more male gamers than female gamers. Most of the players gave themselves high marks for their level of English proficiency. Additionally, they played video games for two to twenty-five hours a week, and more than half of the participants preferred playing English-language video games to those with French localizations. Although the authors claimed that a significant portion of players favored localizing video games, nearly two-thirds of gamers had indifferent or negative opinions about the concept. Additionally, gamers preferred a foreignizing approach to video game translation and generally found the quality of French localization to be good.

The findings of a survey of Iranian console and

computer gamers were presented by Khoshsaligheh and Ameri^[24]. Their study investigated the profile, gaming behaviors, preferences, and impressions of the current state of video game localization in Iran using quantitative data from over 750 gamers. The findings show that playing video games appears to be exclusively enjoyed by men, mostly in their teens and early mid-20s. The most significant findings point to Iranian gamers' preference for a localization strategy that preserves the uniqueness of the original and their general dissatisfaction with how games are currently being localized into Persian.

The current study uses the afore-mentioned review to shed light on the demographics, gaming habits, gamers' preferences, attitudes, and recommendations concerning two video games that have been localized into Arabic. It is in this very context highlighted in above-mentioned review of literature that the four hypotheses of the current study have been built and formulated. An authentic and genuine study assessing the localization of video games and gamers' attitudes to game localization should take into account the demographic data together with the other three hypotheses highlighted in the current study. It is within this framework that our research hypotheses have been established and built, being guided and consistent with research findings in previous literature.

The rationale behind setting up the above-mentioned set of hypotheses is to test the authenticity and accuracy of the questionnaire items on two counts: (1) the role of the demographic data in affecting the participants' reactions to localizing the two games PUBG and Free Fire, and (2) how the three constructs of the questionnaire, namely technical aspects, language issues, and language preference, have affected and impacted the gamers' attitudes and future actions and recommendations to the game localization process into Arabic through their interaction with the localized versions of PUBG and Free Fire.

3.4 Research procedure

The steps followed in this study are summed up in the following:

- The researchers reviewed a good number of relevant questionnaires used in previous studies to design a questionnaire.
- The questionnaire consisted of two main parts. The

first section aimed to collect some demographic information related to the participants' gender, years of playing video games, education, medium used to play games, and time spent gaming a day. The second section investigated the gamers' reactions to the translation of the two video games in question.

- To test the validity of the questionnaire, the questionnaire was sent to three experts in the field of AVT for feedback.

- To test the reliability of the questionnaire, the responses of 22 participants were analyzed statistically as part of a pilot study using the Cronbach's Alpha reliability test.

- The questionnaire was designed using Microsoft forms, and the links were shared via Facebook and WhatsApp groups targeting a representative sample of Arab gamers.

- The Snowball sampling method was used to increase the number of participants. This sampling method entails using current study participants to find new ones. The technique entails selecting one or a small number of initial volunteers who meet the study's requirements and then requesting that they recommend more possible participants. Up until the necessary sample size is reached, the procedure is repeated. As the initial participants are likely to know people who have those characteristics and requirements, it can also be an effective technique to find potential participants who possess particular traits.

4 Analysis and Finding

In this section, the researchers examine the gamers' reception and reaction to the quality of the translation of the two video games, namely PUBG and Free Fire, into Arabic.

The researchers started with a pilot study of 22 participants and analyzed their responses. Based on the results of the pilot sample, which were indicative of interest in video-game localization into Arabic, the researchers continued the data collection process, where the sample size was increased to 112 through the Snowball sampling method. The original sample size was increased about five times. It is worth mentioning that the researchers did their best to ensure representativeness, however, only a few of the gamers were willing to take part in the study, and we ended up analyzing the actual responses we received. This might

be one of the limitations of the current study.

4.1 Sample characteristics (demographic data)

In this section, the researchers analyse the responses of the 112 participants in the study. First, the descriptive statistics for the demographic variables are discussed (Table 5), and then the responses to the 18 items of the questionnaire are presented (Table 6).

Table 5 shows that 68.8% of the participants are males, and 31.2% are females. It also reveals that 52.7% of the participants have played video games for more than 10 years, 26.8% of them for less than 5 years, and 20.5% for 6–10 years. In addition, half of the participants hold a bachelor's degree, 33.9% have a high school level or below, and 16.1% hold a master's degree or higher. It also shows that 61.6% of the participants use laptops to play video games, 24.1% use desktops, and 14.3% use smartphones. Furthermore, 61.6% spend more than 2 h daily playing video games, 24.1% of them spend 1 to 2 h, and 14.3% spend less than 1 h per day.

4.2 Analysis of the questionnaire's items

The researchers compared the participants' responses towards the quality of localizing PUBG and Free Fire

Table 5 Descriptive statistics for the demographic variables.

Variable	Category	Count	Percentage (%)
Gender	Male	77	68.8
	Female	35	31.2
	Total	112	100
Years playing video games	0–5 years	30	26.8
	6–10 years	23	20.5
	More than 10 years	59	52.7
	Total	112	100
Education	High school or less	38	33.9
	University undergraduate degree (bachelor's)	56	50
	University graduate degree	18	16.1
	Total	112	100
Medium to play video games	Smartphone	12	14.3
	Desktop	29	24.1
	Laptop	71	61.6
	Total	112	100
Time spent daily	Less than 1 h	16	14.3
	1–2 h	27	24.1
	More than 2 h	69	61.6
	Total	112	100

into Arabic, as Table 6 shows. The “Agree” column provides the percentage of participants who either “strongly agreed” or “agreed” with the statements of the items in question. Likewise, the “Disagree” column provides the percentage of participants who either “strongly disagreed” or “disagreed” with the item.

Items 1 to 3 of the questionnaire aimed to collect responses about the gamers' reactions towards the “Need for subtitling the games” in PUBG and Free Fire and whether adding subtitles helps them understand the game, especially if they are not familiar with the source language of the game. The participants agreed that they needed the game to be localized to understand its components fully, with 67.5% in favor. Similarly, 72.35% of the participants agreed that Arabic game localization is necessary for people who are not native speakers of the game they are playing. Responses to Item 3 concerning whether the localized Arabic game is a true reflection of what is being said on the screen or not varied, where 40.2% of the participants disagreed to the statement. The findings are consistent with Kudła's^[14] study, which surveyed the reactions of a dedicated group of Polish gamers regarding the best localization scope, the factors that influence their preference, the solutions which characterize an excellent localization, and the ones that localizers should avoid. This is in line with Al-Mazrooa's^[12] study, which showed that the Arabic localization of the identified titles ranged from using only Modern Standard Arabic (MSA) for the first two titles to combining MSA with regional dialects for the last two. The sports titles were emphasized because regional languages in video game localization demonstrate a more significant appeal to Arabic gamers.

Items 4 to 6 of the questionnaire aimed to collect responses about the gamers' reactions to the technical aspects of the two games. For example, the gamers' feedback will clarify whether the font size and color in the localized version are similar to those of the original, whether the amount of text displayed on the localized version is aligned and readable, and if the game interface supports right-to-left languages. 58% of the participants agreed that the font size and color of the Arabic version of PUBG are similar to the original English version, while only 45.6% of the participants expressed the same for Free Fire. Similarly, a little more than half of the participants concurred that the texts in the Arabic version of PUBG are aligned and

Table 6 Participants' responses to the questionnaire's item.

Construct	No.	Participants' response	Game	Percentage of participants (%)		
				Agree	Uncertain	Disagree
Need for subtitled games	1	I need the game to be localized to fully understand its different components.	—	67.5	12.5	20
	2	Arabic game localization is necessary for people who are not native-speakers of the game they are playing.	—	72.35	12.9	14.75
	3	The localized Arabic game is a true reflection of what is being said on the screen.	—	41.5	18.3	40.2
Technical aspect	4	The font size and colour in the localized Arabic game are similar to those in the English version.	PUBG	58	21.5	20.5
			Free Fire	45.6	22.3	32.1
	5	The amount of text displayed on the screen in the Arabic localized version is aligned and easy to follow and read.	PUBG Free Fire	52.7 38.4	17.9 25	29.4 36.6
Language issue	6	The game interface supports right-to-left languages such as Arabic.	PUBG	68.7	17	14.3
			Free Fire	54.4	27.7	17.9
	7	There were spelling errors in the Arabic version of the game.	PUBG Free Fire	76.8 65.2	11.6 21.4	11.6 13.4
Language issue	8	There were grammatical errors in the Arabic version of the game.	PUBG	64.3	17	18.7
			Free Fire	51.8	25	23.2
Language preference	9	There were lexical/semantic errors in the Arabic version of the game.	PUBG	59	20.5	20.5
			Free Fire	50	25.9	24.1
	10	I prefer the localized Arabic version of the game because of cultural and ideological issues.	PUBG Free Fire	52.6 41.9	13.4 17	34 41.1
Language preference	11	I prefer the localized Arabic version because I can understand all the details of the game.	PUBG	60.7	15.2	24.1
			Free Fire	50	17.9	32.1
Attitude to game localization	12	I prefer the localized Arabic version because I feel more comfortable and find it more appealing.	PUBG Free Fire	59.8 50	12.5 15.2	27.7 34.8
	13	The experience of playing the Arabic localized version of the game was engaging.	—	59.4	18.3	22.3
	14	I would like to play more games localized in Arabic in the future.	—	54.5	24.1	21.4
Future action and recommendation	15	Playing video games in the Arabic version is a symbol of affiliation, loyalty, and group identity.	—	52.25	18.75	29
	16	Localizing video games into Arabic should be encouraged.	—	71	12.5	16.5
	17	Arabic game localization should be provided by professional translators with wide experience in video games.	—	80.35	8.95	10.7
	18	Video game design companies should have authentic Arabic sources, not translation, of all games they produce.	—	80.35	11.15	8.5

easy to follow when compared to 38.4% for Free Fire. About two-thirds of the participants agreed that the PUBG interface supports right-to-left languages such as Arabic. 54.4% of the participants expressed the same for Free Fire. Such findings tie well with those of Czech^[29], who examined the function of transcreation in interactive entertainment software and how the medium's tight technological limits affect the end product of the translation process.

Items 7 to 9 of the questionnaire aimed to collect responses about the gamers' reactions to language issues. The gamers' feedback will clarify whether there are spelling, grammatical, or lexical errors in the localized version. 50% or more of the participants expressed their agreement that the Arabic localized version of the two games has spelling, grammatical, and lexical errors. In response to Items 7–9, the participants concurred that the Arabic version of PUBG has more spelling errors, grammatical errors, and lexical/semantic errors compared to Free Fire. This is in line with Al-Batineh and Alawneh^[10], who concluded that the linguistic aspects of games' localization are of great importance.

Items 10 to 12 of the questionnaire aimed to collect responses about the gamers' language preferences when playing the two games under investigation. The gamers' feedback will clarify whether they prefer localization because of cultural and ideological issues if they can understand all the game details and if they feel more comfortable with the localized version of video games. In PUBG, the participants argued that they preferred the Arabic localized version of the game due to cultural and ideological issues (52.6%), the ability to understand all the game details (60.7%), and being more comfortable (59.8%). In parallel to this, the participants' responses to the Arabic version of Free Fire showed similar preferences, with 41.9% for the first reason and 50% for the second and third reasons.

To sum up, based on the statistical analysis, the survey results showed clear support of the participants to the core issue of video game localization in Arabic (first construct in the questionnaire, Items 1–3). The need for the Arabic subtitles was boosted in the gamers' responses to constructs two, three, and four of the questionnaire, namely “technical aspect, language issue, and language preference” (Items 4–12). However, responses to these three constructs pointed out that

more work is still needed to improve the quality of the font size and the amount of text on the screen, which affect the game interface. Other areas of concern in the “language issues” construct are spelling errors, grammatical errors, and lexical/semantic errors in the Arabic version of the two games. If anything, the results most succinctly show that while localizing video games into Arabic is very important, there are gaps to fill in order to improve the quality of the localized version of the two games under investigation. Furthermore, the results emphasize the importance of video game localization which is of great value and benefit to both users and game developers. As responses to the “language preference” construct (Items 10–12) show, the participants were in favor of using the localized Arabic version of the games because this version enabled the gamers to understand all the details of the game. They were also more comfortable as they found the games more appealing and more culturally appropriate. However, as the statistical analysis showed, the importance of localization can be maximized by maintaining the highest quality standards that will increase the user base and improve engagement, on one hand, and help game developers produce quality products that create a booming video games market and industry, on the other.

Items 13 to 15 of the questionnaire aimed to collect responses about the gamers' attitudes to game localization. The gamers' feedback will clarify whether the localized version of the games was engaging, whether they prefer to play more localized games in the future, and whether the Arabic version symbolizes affiliation, loyalty, and group identity. In response to Item 13, 59.4% of the participants confirmed that the experience of playing the Arabic versions of the games was engaging. A little over 50% of the participants were keen about playing more games localized in Arabic in the future, reflecting a sense of affiliation, loyalty, solidarity, and group identity.

Items 16 to 18 of the questionnaire aimed to collect responses about the gamers' reactions to the “future action and recommendation” construct. For example, the gamers' feedback will clarify whether localizing video games into Arabic should be encouraged, provided by professional translators, and whether video game companies should have authentic Arabic sources, not translations, of all the games they produce. 71% of

the participants agreed that localizing video games into Arabic should be encouraged. Similarly, 80.35% of the participants stressed that localizing video games should be performed by highly-experienced professional translators. In addition, they recommended having video games that were produced originally in Arabic.

Based on the statistical analysis of the responses to the last two constructs of the questionnaire, namely “attitudes to game localization and future actions and recommendations”, the results showed positive reactions and attitudes towards the localized/Arabic version of the games. As the participants put it, the Arabic version is engaging and a symbol of affiliation, loyalty, and group identity. Consequently, under the last construct, “future action and recommendation”, they recommended using localized video games and recruiting professional translators with wide experience to do the job, and that video game design companies should have authentic Arabic sources, not translation of all the games they produce.

To analyze the items of the six constructs (need for subtitled games, technical aspect, language issue, language preference, attitudes to game localization, and future action and recommendation), the means, standard deviations, and rank were calculated for each item in each construct. The results are presented in the subsections below.

4.3 Testing the hypotheses

This section is dedicated to testing the set of hypotheses outlined in Section 3.3.

4.3.1 Hypothesis 1

To test the emergence of statistically significant differences in conjunction with the demographic data, the researcher calculated the subscale means for each construct and ran a *T*-test. Table 7 shows the result for testing if gender has affected the gamers' reactions to

Table 7 Independent sample *T*-test for the differences according to gender in PUBG and Free Fire.

Category	<i>T</i> -value	Sig. <i>T</i>
Need for subtitled games	0.280	0.780
Technical aspect	0.415	0.679
Language issue	0.950	0.344
Language preference	-1.063	0.290
Attitude to game localization	-1.856	0.066
Future action and recommendation	-0.354	0.724

the two games in question. It shows no statistically significant differences between the participants' gender and their reaction to the six categories. The significant level (sig. *T*) values were greater than (0.05), which means that the gender of the participants did not affect their reactions to the localized Arabic versions of PUBG and Free Fire.

Table 8 shows the result for testing if “years of playing video games” affected the gamers' reactions to the two games under investigation. It shows that there are no statistically significant differences between the participants' years of playing video games and their reactions to the six categories. The significant level (sig. *F*) values were greater than (0.05), which means that participants' years of playing video games did not affect their reactions to the localized Arabic versions of PUBG and Free Fire.

Table 9 shows the result for testing if the educational level has affected the gamers' reactions to the two investigated games. It shows no statistically significant differences between the participants' education and their reaction to the first four constructs, namely need for subtitled games, technical aspects, language issues, and language preferences. Given that the significant

Table 8 One-way ANOVA for the differences in PUBG and Free Fire responses according to years of playing video games.

Category	<i>F</i> -value	Sig. <i>F</i>
Need for subtitled games	0.249	0.78
Technical aspect	0.92	0.401
Language issue	2.051	0.134
Language preference	0.849	0.43
Attitude to game localization	0.005	0.996
Future action and recommendation	0.019	0.981

Table 9 One-way ANOVA for the differences in PUBG and Free Fire responses according to education.

Category	<i>F</i> -value	Sig. <i>F</i>
Need for subtitled games	2.466	0.066
Technical aspect	1.868	0.139
Language issue	0.929	0.43
Language preference	0.727	0.538
Attitude to game localization	4.162**	0.008
Future action and recommendation	2.747*	0.046

Note: ** $p < 0.01$ and * $p < 0.05$

level (sig. *F*) values were greater than 0.05, participants' education did not affect their reactions to the localized Arabic versions of PUBG and Free Fire for these constructs. On the other hand, there have been statistically significant differences between the participants' education and their reaction to the last two constructs, namely attitudes to game localization and future actions and recommendations, since the significant level (sig. *F*) values were less than 0.05. This means that the participants' educational level affected their reactions to the localized Arabic versions of PUBG and Free Fire for these constructs.

Table 10 shows the result for testing if medium used to play video games have affected the gamers' reactions to the two investigated games. It shows no statistically significant differences between the participants' choice of medium to play video games and their reactions to the six categories. The significant level (sig. *F*) values were greater than 0.05, which means that the medium that the participants used did not affect their reactions to PUBG and Free Fire.

Table 11 shows the result for testing if time spent gaming a day has affected the gamers' reactions to the two investigated games. It shows no statistically significant differences between the time participants spent gaming a day and their reactions to the six constructs. The significant level (sig. *F*) values were greater than 0.05, which means that this variable did not affect their reactions to PUBG and Free Fire.

To test if the technical aspects, language issues, and language preferences have affected the participants' attitudes and future actions and recommendations, the researcher calculated the subscale means for each construct and ran a linear regression test, as Tables 12 and 13 show.

Table 10 One-way ANOVA for the differences of PUBG and Free Fire responses according to the medium used to play video games.

Category	<i>F</i> -value	Sig. <i>F</i>
Need for subtitled games	0.77	0.466
Technical aspect	0.119	0.888
Language issue	0.919	0.402
Language preference	0.455	0.636
Attitude to game localization	0.436	0.648
Future action and recommendation	1.221	0.299

Table 11 One-way ANOVA for the differences in PUBG and Free Fire responses according to time spent gaming a day.

Category	<i>F</i> -value	Sig. <i>F</i>
Need for subtitled games	0.328	0.721
Technical aspect	0.299	0.742
Language issue	0.768	0.466
Language preference	0.904	0.408
Attitude to game localization	1.043	0.356
Future action and recommendation	0.913	0.404

Table 12 shows that the independent variables (technical aspects, language issues, and language preferences) can explain 43.1% of the variation in the dependent variable (attitudes to game localization) for PUBG, since the determination coefficient equals $R^2=0.431$.

The independent variables (technical aspects, language issues, and language preferences) can explain 39.9% of the variation in the dependent variable (attitudes to game localization) for Free Fire, since the determination coefficient equals $R^2=0.399$.

Table 13 shows that the independent variables (technical aspects, language issues, and language preferences) can explain 20.7% of the variation in the dependent variable (future actions and recommendations) for PUBG, since the determination coefficient equals $R^2=0.207$.

The independent variables (technical aspects, language issues, and language preferences) can explain 36.6% of the variation in the dependent variable (future actions and recommendations) for Free Fire, since the determination coefficient equals $R^2=0.366$.

Further to the above, testing the research hypotheses has led to the conclusion that of all five variables comprising the first part of the questionnaire, namely the demographic data of gender, years playing video games, education, medium used to play the game, and time spent gaming a day, only "education" was found to show statistically significant differences between the participants' reaction to game localization. Still, this very variable of education has only affected two of the five constructs, namely "participants' attitudes to game localization and future reactions and recommendations", which demonstrated statistically significant differences in gamers' reactions to game localization in Arabic.

Table 12 Multiple linear regression results for testing the effect of technical aspects, language issues, and language preferences on attitudes to game localization.

Game	Factor	Unstandardized coefficient	<i>T</i> -value	Sig. <i>T</i>	<i>F</i> -value	<i>p</i> -value (Sig. <i>F</i>)	Adjusted <i>R</i> ² value
PUBG	Technical aspect	0.458	4.967***	0.000			0.431
	Language issue	-0.087	-0.985	0.327	29.006***	0.000	
	Language preference	0.457	6.621***	0.000			
Free Fire	Technical aspect	0.427	4.582***	0.000			0.399
	Language issue	-0.043	-0.495	0.622	25.611***	0.000	
	Language preference	0.412	5.660***	0.000			

Note: ****p* < 0.001

Table 13 Multiple linear regression results for testing the effect of technical aspects, language issues, and language preferences on future actions and recommendations.

Game	Factor	Unstandardized coefficient	<i>T</i> -value	Sig. <i>T</i>	<i>F</i> -value	<i>p</i> -value (Sig. <i>F</i>)	Adjusted <i>R</i> ² value
PUBG	Technical aspect	0.153	1.762	0.081			0.207
	Language issue	0.255	3.053**	0.003	10.669***	0.000	
	Language preference	0.124	1.913	0.058			
Free Fire	Technical aspect	0.328	3.234**	0.002			0.336
	Language issue	0.309	3.303**	0.001	19.692***	0.000	
	Language preference	0.173	2.188*	0.031			

Note: ****p* < 0.001, ***p* < 0.01, and **p* < 0.05

4.3.2 Hypothesis 2

To test if the technical aspects have affected the participants' attitudes and future actions and recommendations, the researchers calculated the subscale means for each construct and ran a linear regression test, as shown in Tables 12 and 13.

Table 12 shows that the sig. *T* value is equal to 0.000 (less than 0.05), so there is a statistically significant effect of the independent variable (technical aspects) on the participants' attitudes to game localization for PUBG. The Beta values showed the effect size of "technical aspect" (45.8%) on the participants' attitudes toward game localization.

While the sig. *T* value is equal to 0.000 (less than 0.05), so there is also a statistically significant effect of the independent variable (technical aspects) on the participants' attitudes to game localization for Free Fire. The Beta values showed the effect size of "technical aspect" (42.7%) on the participants' attitudes toward game localization.

Table 13 shows that the sig. *T* value is equal to 0.081 (greater than 0.05), so there is no statistically significant effect of the independent variable (technical aspects) on the participants' future actions and recommendations for PUBG.

While the sig. *T* value is equal to 0.002 (less than 0.05), so there is also a statistically significant effect of the independent variable (technical aspects) on the participants' future actions and recommendations for Free Fire. The Beta values showed the effect size of "technical aspect" (32.8%) on the participants' future actions and recommendations.

4.3.3 Hypothesis 3

To test if the language issues affected the participants' attitudes and future actions and recommendations, the researchers calculated the subscale means for each construct and ran a linear regression test, as Tables 12 and 13 show.

Table 12 shows that the sig. *T* value is equal to 0.327 (greater than 0.05), so there is no statistically

significant effect of the independent variable (language issues) on the participants' attitudes to game localization for PUBG.

While the sig. *T* value is equal to 0.622 (greater than 0.05), so there is also no statistically significant effect of the independent variable (language issues) on the participants' attitudes to game localization for Free Fire.

Table 13 shows that the sig. *T* value is equal to 0.003 (less than 0.05), so there is a statistically significant effect of the independent variable (language issues) on the participants' future actions and recommendations for PUBG. The Beta values showed the effect size of "language issue" (25.5%) on the participants' future actions and recommendations.

While the sig. *T* value is equal to 0.001 (less than 0.05), so there is also a statistically significant effect of the independent variable (language issues) on the participants' future actions and recommendations for Free Fire. The Beta values showed the effect size of "language issue" (30.9%) on the participants' future actions and recommendations.

4.3.4 Hypothesis 4

To test if the language preferences have affected the audience's attitudes and future actions and recommendations, the researchers calculated the subscale means for each construct and ran a linear regression test, as Tables 12 and 13 show.

Table 12 shows that the sig. *T* value is equal to 0.000 (less than 0.05), so there is a statistically significant effect of the independent variable (language preferences) on the participants' attitudes to game localization for PUBG. The Beta values showed the effect size of "language preference" (45.7%) on the participants' attitudes to game localization.

While the sig. *T* value is equal to 0.000 (less than 0.05), there is also a statistically significant effect of the independent variable (language preferences) on the participants' attitudes to game localization for Free Fire. The Beta values showed the effect size of "language preference" (41.2%) on the participants' attitudes to game localization.

Table 13 shows that the sig. *T* value is equal to 0.058 (greater than 0.05), so there is no statistically significant effect of the independent variable (language preferences) on the participants' future actions and recommendations for PUBG.

While the sig. *T* value is equal to 0.031 (less than 0.05), so there is also a statistically significant effect of the independent variable (language preferences) on the participants' future actions and recommendations for Free Fire. The Beta values showed the effect size of "language preference" (17.3%) on the participants' future actions and recommendations.

In view of the above and considering the research findings established in this study, we can argue that the results of the statistical analysis obtained through the different research tools, methods, research questions, and research hypothesis lend support to the thesis that successful video game localization is needed. It is extremely important since good localization is an added value to the video game industry, game developers, and gamers as it boosts and facilitates user base as well as improving engagement. Research on video game localization in the Arab world should call on game developers, practitioners, subtitlers, dubbers, and all stakeholders in the gaming industry to provide quality products taking into account the technical, linguistic, and cultural aspects that help make gaming a rewarding and enjoyable experience to Arab gamers (cf. Al-Batineh^[7], 2021)

5 Conclusion and Recommendation

The researchers analyzed the responses of the 112 participants who took part in the study and responded to the 18-item questionnaire. To this end, some statistical tests were conducted to investigate the 112 participants' reactions to the Arabic localization of PUBG and Free Fire. All the demographic data items and the questionnaire's constructs, namely the need for subtitled games, technical aspect, language issue, language preference, attitude to game localization, and future action and recommendation, were statistically analysed, and the following outcomes were obtained:

- There were no statistically significant differences between the participants' demographic information and their reaction to the need for subtitled games, technical aspects, language issues, language preferences, attitudes to game localization, and future actions and recommendations.
- There is a significant medium positive relationship between technical aspects and participants' attitudes to game localization.

- There is a significant medium positive relationship between language issues and participants' future actions and recommendations.

- There is a significant weak positive relationship between language preferences and participants' future actions and recommendations.

However, while taking the above-mentioned remarks into account, the gamers' reactions to the questionnaire's six constructs and the 18 items varied slightly according to the nature of the construct and related items. A summary of the findings is given below:

- **Need for subtitled games:** This construct reflected strong and firm gamers' reactions in favour of localizing video games by providing Arabic subtitles, considering it a necessity, especially for non-native speakers of the game.

- **Technical aspect:** The results have shown that gamers representing the research sample were satisfied with the technical aspects of the localization process, which are presented in terms of font size and color, text displayed on the screen, and the fact that the game interface supports the right-to-left languages such as Arabic.

- **Language issue:** This aspect revealed a weak positive response. The gamers' negative remarks focused on the grammatical errors, spelling errors, and lexical semantic errors in the Arabic versions of the game.

- **Language preference:** This aspect reflected a strong positive response. The gamers' positive remarks focused on their preference for having localized Arabic versions due to cultural and ideological issues leading to a better understanding of the game's details. This, in turn, helps gamers feel more comfortable and more interactive.

- **Attitude to game localization:** The results have shown that gamers responded positively to the experience of playing the Arabic localized version of the games.

- **Future action and recommendation:** This construct revealed a weak positive response. The gamers noted that the localization of video games is still lacking and needs further improvements. For example, the translation must be done by competent professional localizers with wide experience in the field, and video game companies must have authentic Arabic

sources for all the games they produce. Such remarks were expressed in the form of further actions and recommendations.

To conclude, in view of the above findings, the results of the quantitative analysis most conspicuously answer the research question set for this study, namely, "What are the games' reactions to the Arabic localization of PUBG and Free Fire?" This, in turn, is consistent with the overall objective of the current study to assess the quality of video game localization in Arabic.

Based on the results of the quantitative analysis, the research findings confirmed the validity of the aforementioned four hypotheses, which again lends support to the research question at hand and research significance. The results have most succinctly shown that all four hypotheses have led to the conclusion that gamers are keen to have a better localization of the two video games while taking mostly language issues and technical aspects into account.

The primary focus of this study was to assess the quality of localizing the two video games, namely, PUBG and Free Fire, into Arabic. To this end, the researchers investigated a corpus of data that was collected manually from the two games. As such, it is worth pointing out that the current piece of research has some limitations, which are outlined in this section.

In fact, the current study has only investigated the localization of PUBG and Free Fire into Arabic; therefore, research endeavours in the localization domain are needed to unveil and pinpoint other areas of weakness and challenges which hinder game localization into Arabic. For example, localization specialists and researchers can take a look into video game localization with various genres and types. This can cover a massive research ground in the humanities and social sciences, among others. Comparative studies between different areas of specialization and languages seeking game localization achievement may be another rich area of investigation.

It might be argued that the designed constructs focus more on the quality of the localization of the two selected video games instead of the importance of localization. In fact, there is an inherent, inter-dependent, and reciprocal relationship between the quality of localizing video games and the importance of localization. A positive assessment of the quality of

localization is a parameter and benchmark of adequacy and importance, generating positive attitudes and reactions towards sanctioning localization and not abandoning it. In other words, if there is a need for localization in subtitled games, as construct one of the questionnaire reads, then localization is important for gamers to understand the content of the games, the interface (a set of visual elements that allow players to engage with the game story (narrative) and enter the game area), and in-game (including anything that occurs or exists within a game) elements. For this to happen, localization must meet the highest standards of quality, accuracy, and relevance taking into consideration the technical aspects and language issues. Maintaining quality standards is a priority for video game developers as it reflects an understanding of the dynamics of the Arabic video game market.

As indicated above, the small sample size is one of the current study's limitations, given that the 112-participant sample size may not accurately represent the overall community of Arab gamers. Furthermore, the small number of participants willing to participate in the study posed a problem, which hindered our capacity to get a bigger sample size, despite our efforts and keenness to ensure representativeness within the study's parameters, such as considering varied demographics and gaming preferences. Clearly then, a larger sample would have improved the current research and enabled more reliable generalizations. However, it is important to remember that finding enough participants can be difficult and, in some situations, relies on people's desire and interest to participate. Therefore, it would be advantageous to use a variety of data collection techniques in future studies to promote involvement, such as providing rewards or contacting more gaming communities. Researchers may also consider working with gaming companies or platforms to reach larger participant pools. Guaranteeing a more representative and diversified sample will improve the validity of the research findings. Nevertheless, despite the restrictions due to the small sample size, we believe that our survey offers insightful information on how Arab gamers feel about the localization of PUBG and Free Fire. To overcome this restriction and improve their findings' validity and

generalizability, we recommend that future studies use larger sample sizes and different recruitment techniques.

To conclude, future research can investigate more specific aspects of video game localization quality, such as the quality of the dubbed versions of video games. To recap, further scholarly research on video game localization is a foremost priority as it can help translators/localizers avoid making mistakes that adversely affect the quality of the AVT product.

Appendix

Questionnaire

Assessing the Quality of Video Game Localization into Arabic: A Case Study of PUBG and Free Fire

Dear respondent:

This research tool is designed to elicit the participants' responses about the quality of localizing PUBG and Free Fire into Arabic.

The researcher assures you that your responses to this questionnaire will be used only for research purposes.

Please respond to each of the following questions.

Thank you.

Acknowledgment

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Table A1 Demographic information.

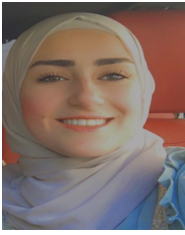
Gender	Male	
	Female	
Years playing video games	0–5 years	
	6–10 years	
	More than 10 years	
Education	No schooling	
	High school or below	
	Bachelor's degree	
	Master's degree or higher	
Medium used to play video games	Smartphones	
	Desktops	
	Laptops	
Time spent gaming in a day	Less than 1 h	
	More than 1 h	
	More than 2 h	

Table A2 Participant's responses to the questionnaire's constructs and items.

Construct	No.	Item	Game	Response				
				Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
A Need for subtitled game	1	I need the game to be localized to fully understand its different components.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	2	Arabic game localization is necessary for people who are not native speakers of the game they are playing.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	3	The localized Arabic game is a true reflection of what is being said on the screen.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
B Technical aspect	4	The font size and color in the localized Arabic game are similar to those in the English version.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	5	The amount of text displayed on the screen in the Arabic localized version is aligned and easy to follow and read.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	6	The game interface supports right-to-left languages such as Arabic.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
C Language issue	7	There were spelling errors in the Arabic version of the game.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	8	There were grammatical errors in the Arabic version of the game.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Free Fire			Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
9	There were lexical/semantic errors in the Arabic version of the game.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
		Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
D Language preference	10	I prefer the localized Arabic version of the game because of cultural and ideological issues.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	11	I prefer the localized Arabic version because I can understand all the details of the game.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
12	I prefer the localized Arabic version because I feel more comfortable and appealing.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
		Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
E Attitude to game localization	13	The experience of playing the Arabic localized version of the game was engaging.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	14	I would like to play more games localized in Arabic in the future.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	15	Playing video games in the Arabic version is a symbol of affiliation, loyalty, and group identity.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
16	Localizing video games into Arabic should be encouraged.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
		Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
F Future action and recommendation	17	Arabic game localization should be provided by professional translators with wide experience in video games.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
18	Video game design companies should have authentic Arabic source, not translation, of all games they produce.	PUBG	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
			Free Fire	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree

References

- [1] E. A. Nida and C. R. Taber, *The Theory and Practice of Translation*. Leiden, the Netherlands: E. J. Brill, 1974.
- [2] J. C. Catford, *A Linguistic Theory of Translation*. London, UK: Oxford University Press, 1965.
- [3] H. Abu-Rayyash, A. S. Haider, and A. Al-Adwan, Strategies of translating swear words into Arabic: A case study of a parallel corpus of Netflix English-Arabic movie subtitles, *Humanit. Soc. Sci. Commun.*, vol. 10, p. 39, 2023.
- [4] A. S. Haider, B. Saideen, and R. F. Hussein, Subtitling taboo expressions from a conservative to a more liberal culture: The case of the Arab TV series jinn, *Middle East Journal of Culture and Communication*, doi: 10.1163/18739865-tat00006.
- [5] A. G. Chejne, Arabic: Its significance and place in Arab-Muslim society, *Middle East Journal*, vol. 19, no. 4, pp. 447–470, 1965.
- [6] L. Najarian, Arabic video game culture in the Middle East: A brief description of the Middle East’s video game culture, <https://ccci.am/video-game-culture-in-the-middle-east/>, 2021.
- [7] M. Al-Batineh, Issues in Arabic video game localization: A descriptive study, *Int. J. Transl. Interpret. Res.*, vol. 13, no. 2, pp. 45–64, 2021.
- [8] C. Mangiron, Reception of game subtitles: An empirical study, *Transl.*, vol. 22, no. 1, pp. 72–93, 2016.
- [9] M. O’hagan and C. Mangiron, *Game Localization: Translating for the Global Digital Entertainment Industry*. Amsterdam, the Netherlands: John Benjamins Publishing Company, 2013.
- [10] M. Al-Batineh and R. Alawneh, Current trends in localizing video games into Arabic: Localization levels and gamers’ preferences, *Perspectives*, vol. 30, no. 2, pp. 323–342, 2022.
- [11] A. A. Mahasneh and M. T. A. Kishek, Arabic localization of video games “tomb raider™ (2013)”: A start or a failure, *Lebende Sprachen*, vol. 63, no. 1, pp. 47–62, 2018.
- [12] N. Al-Mazrooa, Arabic localisation: Key case studies for translation studies, PhD dissertation, School of Modern Languages, Cardiff University, Cardiff, UK, 2018.
- [13] A. Chouit, A critical evaluation of Venuti’s domestication and foreignization theory of translation, *Traduction et Langues*, vol. 18, no. 1, pp. 72–82, 2019.
- [14] D. Kudła, The views of dedicated Polish gamers on the localization of video games into Polish—Online survey results, *Kwartalnik Neofilologiczny*, no. 4, pp. 530–549, 2023.
- [15] C. Mangiron, Reception studies in game localization, in *Reception Studies and Audiovisual Translation*, E. D. Giovanni and Y. Gambier, eds. Amsterdam, the Netherlands: John Benjamins Publishing, 2018, pp. 277–296.
- [16] M. O’Hagan, Game localization: A critical overview and implications for audiovisual translation, in *The Routledge Handbook of Audiovisual Translation*, L. Pérez-González, ed. London, UK: Routledge, 2018, pp. 145–159.
- [17] X. Zhang, Video game localization: Translating interactive entertainment, in *The Routledge Handbook of Translation and Media*, E. Bielsa, ed. London, UK: Routledge, 2022, pp. 369–383.
- [18] L. J. Cronbach, Coefficient alpha and the internal structure of tests, *Psychometrika*, vol. 16, no. 3, pp. 297–334, 1951.
- [19] J. C. Nunally, *Psychometric Theory: 2nd Ed.* New York, NY, USA: McGraw-Hill, 1978.
- [20] D. George and P. Mallery, *SPSS for Windows Step by Step: A Simple Guide and Reference, 11.0 Update*. Boston, MA, USA: Allyn & Bacon, 2003.
- [21] J. F. Hair, C. M. Ringle, and M. Sarstedt, PLS-SEM: Indeed a silver bullet, *J. Mark. Theory Pract.*, vol. 19, no. 2, pp. 139–152, 2011.
- [22] J. Henseler, C. M. Ringle, and M. Sarstedt, A new criterion for assessing discriminant validity in variance-based structural equation modeling, *J. Acad. Mark. Sci.*, vol. 43, pp. 115–135, 2015.
- [23] U. Ellefsen and M. Á. Bernal-Merino, Harnessing the roar of the crowd, *J. Int. Localization*, vol. 5, no. 1, pp. 21–48, 2018.
- [24] M. Khoshsaligheh and S. Ameri, Video game localisation in Iran: A survey of users’ profile, gaming habits and preferences, *Transl.*, vol. 26, no. 2, pp. 190–208, 2020.
- [25] A. Fernández-Costales, Analyzing players’ perceptions on the translation of video games, in *Media Across Borders Localizing TV, Film, and Video Games*, A. Esser, M. Á. Bernal-Merino, and I. R. Smith, eds. Abingdon, VA, USA: Routledge, 2016, pp. 182–201.
- [26] F. Geurts, What do you want to play? The desirability of video game translations from English into Dutch according to Dutch gamers and non-gamers, Master dissertation, Faculty of Humanities, University of Leiden, Leiden, the Netherlands, 2015.
- [27] M. G. Puerto, La localización de videojuegos hecha por aficionados: El caso de *Undertale*. [Video Game Translation by Amateurs: The Case of *Undertale*.], Bachelor dissertation, Department of Translation and Communication, Universitat Jaume I, Castellón, Spain, 2017.
- [28] M. O’Hagan, Towards a cross-cultural game design: An explorative study in understanding the player experience of a localised Japanese video game, *The Journal of Specialised Translation*, no. 11, pp. 211–233, 2009.
- [29] D. Czech, Challenges in video game localization: An integrated perspective, *Explorations: A Journal of Language and Literature*, vol. 1, pp. 3–25, 2013.



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