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Research Paper

The Effect of Too Much Information and Technology Exhaustion on Shoppers' Information Anxiety

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Abstract

The phenomenon of too much information is one of the phenomena accompanying the spread of information technology and the Internet, which made users face amounts of information that exceed their needs and their ability to deal with it, which led to a number of negative effects, perhaps the most prominent of which is the state of information fatigue and anxiety. The main problem that the current research seeks to address is the state of anxiety facing online shoppers resulting from the abundance of information related to products in a way that exceeds the shoppers' ability to deal with it. Therefore, the research aims to identify the impact of too much information and exhaustion resulting from the use of information technology on the occurrence of information anxiety among online shoppers. To achieve this, the quantitative approach was adopted by designing an electronic questionnaire distributed to a sample of online shoppers with a size of 326 participants, and the data were analyzed using structural equation modeling using SmartPLS 4. The study reached a set of results, the most prominent of which is the presence of a direct impact of too much information on the occurrence of anxiety among online shoppers.

Keywords
Too much information, Information anxiety, Technology exhaustion, Online shopping

ورقة بحثي

تأثير كثرة المعلومات والإرهاق التكنولوجي في القلق المعلوماتي للمتسوقين

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المستخلص

تعد ظاهرة كثرة المعلومات من الظواهر المصاحبة لانتشار تقنيات المعلومات والإنترنت والتي جعلت المستخدمين يواجهون كميات من المعلومات تفوق احتياجاتهم وقدرتهم للتعامل معها، والتي أدت إلى عدد من التأثيرات السلبية ولعل من أبرزها حالة الإرهاق التكنولوجي والقلق المعلوماتي. تتمثل المشكلة الرئيسة التي يسعى البحث الحالي لمعالجتها بحالة القلق التي تواجه المتسوقين عبر الإنترنت والناجمة عن كثرة المعلومات المتعلقة بالمنتجات على نحو يفوق قدرات المتسوقين للتعامل معها. لذا يهدف البحث للتعرف على تأثير كثرة المعلومات والإرهاق الناجم عن استعمال تكنولوجيا المعلومات في حصول حالة القلق المعلوماتي لدى المتسوقين عبر الإنترنت. ولتحقيق ذلك تم اعتماد المنهج الكمي، وجُمعت البيانات عن طريق تصميم استبانة إلكترونية وزعت على عينة من المتسوقين عبر الإنترنت بلغ حجمها 326 مشاركًا، وحُللت البيانات عن طريق النمذجة بالمعادلات البنائية باستعمال برمجية (SmartPLS 4). توصلت البحث إلى وجود تأثير مباشر لكثرة المعلومات في حدوث حالتي الإرهاق التكنولوجي والقلق المعلوماتي لدى المتسوقين عبر الإنترنت.

الكلمات المفتاحية:

كثرة المعلومات، قلق المعلومات، الإرهاق التكنولوجي، التسوق عبر الإنترنت

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1. Introduction

New fundamental concepts for administrations worldwide have emerged with the various developments in management science and their increasing connection with information technology. The idea of information anxiety is modern and essential nowadays. (Allison, 2008). Information anxiety is associated with a person's feeling of ambiguity and uncertainty. Too much information often leads to a negative state in individuals called information anxiety (Eppler & Mengis, 2004; Gouws & Tarp, 2017). In the Internet age, users have to deal with a large amount of information (Fu et al., 2020).

Too much information negatively affects people's perceptions because of the large amounts of information (Shrivastav & Hiltz, 2013). Behavioral economics has focused on subjective decisions that consumers can make in the presence of significant influences surrounding them (Reyes-Menendez et al., 2019).

Too much information has become one of the biggest challenges of the modern era (Roetzel & Fehrenbacher, 2020). The problem of too much information is not something new, but the emergence of the Internet has increased this phenomenon. (Al-Kumaim, 2020). Based on the above, the following research questions can be formulated:

- Does an increase in too much information contribute to higher levels of information anxiety?
- Is there a relationship between increased technology exhaustion and information anxiety?

2. Theoretical background

The current section aims to introduce the terms related to article variables, as well as to review some relevant studies.

2.1 Too much information

The phenomenon of too much information is one of the problems currently facing most users of social networks (Umeozor, 2017) because these users obtain information that exceeds their ability to deal with it (Islam et al., 2018; Mustapar et al., 2016).

When the amount of information individuals receive exceeds their cognitive ability to process it, a state of too information occurs (Rufeng et al., 2023). This means that limitations related to individuals' mental abilities, such as memory, lead to this state (Gunaratne et al., 2020). Individuals may not feel this state until symptoms appear (Mustapar et al., 2016).

The reasons for too much information include the presence of large amounts of heterogeneous information on the Internet, which makes it difficult to evaluate and select the appropriate information (Schmitt et al., 2018). The limited time available to users to obtain appropriate information, and its low quality, can also lead to this situation (Özkan & Tolon, 2015), in addition to the provision of information in a non-sequential manner (Yu et al., 2019).

One of the negative effects of too much information is on the shopping process, which refers to the amount of information that online shoppers encounter when purchasing

products (Huang & Zhou, 2019). It is likely that shoppers' purchasing decisions will be affected when online shopping stores increase, resulting in obtaining massive amounts of information about products (Ding et al., 2017).

In online shopping, too much information denotes the abundance of information a shopper encounters while attempting to make a purchase decision (Melinat et al., 2014)(Huang & Zhou, 2019).

2.2 Information Anxiety

Information anxiety is a negative phenomenon that hinders many members of society from achieving their goals (Eklof, 2013).

Anxiety is commonly described as an emotional state of discomfort resulting from the expectation of negative outcomes (Van Kampen, 2003).

Information anxiety is the stress caused by the inability to access, use, or understand necessary information, resulting from disorganization, too much, or too little information (Shrivastav & Hiltz, 2013). It occurs when individuals attempt to absorb large amounts of information, become overwhelmed by its volume, and are unable to effectively process it (Eklof, 2013). Individuals with information anxiety feel unable to filter out all relevant information, unable to evaluate it, and anxious about its danger. (Papić et al., 2012). Users' anxiety about new information systems does not negatively affect the system unless they believe the new system is complex or challenging to use (Donmez-Turan, 2019).

Information anxiety relates to the amount of information, its reception, processing, and application (Hartog, 2017).

Information anxiety is highly prevalent in the online shopping environment due to the numerous risks that may arise, including credit card fraud and the violation of users' privacy (Celik, 2016).

2.3 Technology exhaustion

The information systems literature has used the term "exhaustion" to express an individual's psychological response to stressful situations (Yu et al., 2018). Exhaustion is the user's weariness related to their activities due to overwork or stress (Maier et al., 2015). It represents the depletion of mental resources related to prolonged engagement in situations that require significant effort (Schaufeli et al., 1995). People become overly overwhelmed when using new information technology (Hessari & Nategh, 2022). IT users in general and social media users in particular feel exhausted when overwhelmed with activities that require them to interact with many contacts and read a large amount of content (Fu et al., 2020).

One of the reasons for technology exhaustion among users is technostress. (Cao & Sun, 2018), which is a feeling of anxiety and a negative impact on technology users' thoughts and behaviors, often leading to poor performance (Tagurum YO, Okonoda KM, Miner CA, 2017). Singh et al. (2022) Found that forced remote work through personal digital platforms leads to technology exhaustion.

The results of the study by Ragu-Nathan & Tarafdar (2008) Revealed that technology exhaustion has serious consequences, including job exhaustion.

Resilient individuals can cope with technology exhaustion through practical methods. (Li & Nishikawa, 2012), such as by seeking technical support or developing their technical skills (Tarafdar et al., 2019).

3. Research model

Figure 1 illustrates the research model, which was developed based on a large literature on too much information, as an independent variable, affects both information anxiety and technology exhaustion of online shoppers as dependent variables, on the one hand, and to investigate the effect of technology exhaustion on information anxiety, on the other hand.

3.1 Too much information and information anxiety

Anxiety is an excessive emotional response to fear characterized by heightened physiological activity accompanied by tension (Atanasoff & Venable, 2017).
When people feel anxious about technology, they tend to overestimate the effort required to use it and underestimate the benefits they can get from it. (Celik, 2016). Too much information leads to anxiety and stress, as well as a lack of concentration. (Renjith, 2017). Long-term exposure to too much information can cause stress, anxiety, sadness, and depression in individuals. (Bawden & Robinson, 2009). There are several reasons for information anxiety: the individual's inability to understand information, the amount of information, and not knowing where the information is located. (Girard & Allison, 2008). Based on the above, the following hypothesis can be formulated:
H1: Too much information (TMI) has a positive effect on the information anxiety (IA)
H2: Too much information (TMI) has a positive effect on the Technology exhaustion (TE)

3.2 Technology exhaustion and information anxiety

Although information technology brings significant benefits to users, it can also negatively affect them by causing technological stress. (Ayyagari et al., 2011). Technological stress causes physical and psychological problems for users. (Tagurum YO, Okonoda KM, Miner CA, 2017).
(Estrada-Muñoz et al., 2022) The study found that technostress can lead to increased levels of anxiety and stress in individuals. The study showed that constant interaction with technology without adequate breaks can cause psychological stress, which increases anxiety levels.
Consequently, the following hypothesis is suggested:
H2: Technology exhaustion (TE) has positive effects on information anxiety (IA)

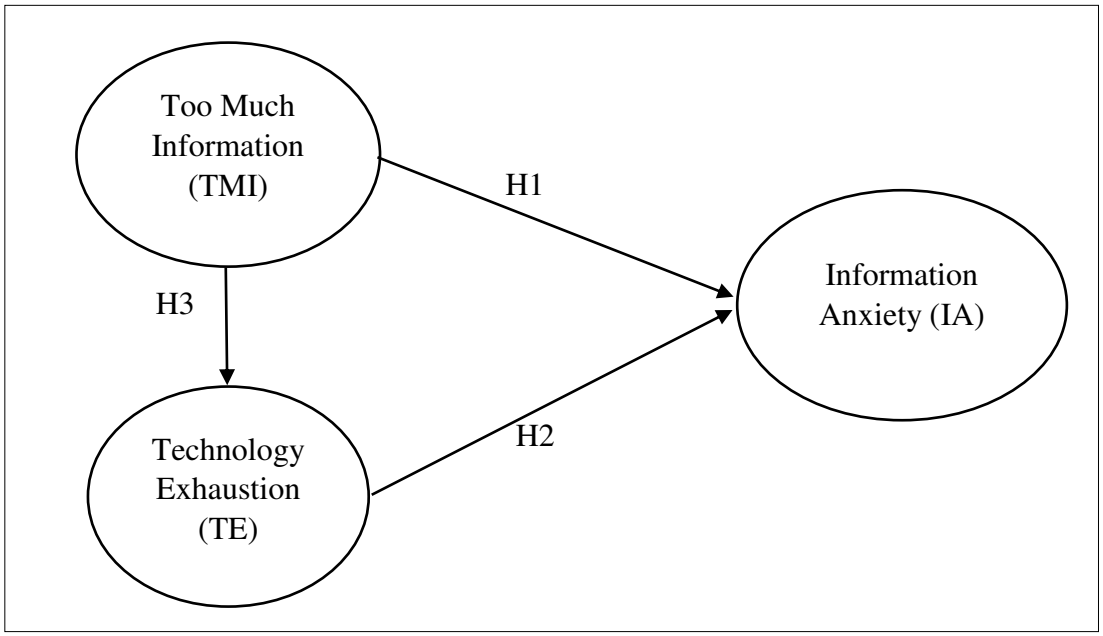


Figure (1.) Research Model

4. Research methodology

4.1 Construct measurement

The current research used ready-made scales prepared in the literature, as shown in Table 1. The scales were translated into Arabic to be compatible with the respondents in the research environment, and a five-point Likert scale was used. Appendix A shows the research questionnaire.

Table (1). Research measurement

Constructs	Items	Sources
Too Much Information (TMI)	5	(Zhang et al., 2016) (Karr-Wisniewski & Lu, 2010)(Ayyagari, 2012)
Technology Exhaustion (TE)	5	(Ayyagari et al., 2011) (Mette et al., 2014)
Information Anxiety (IA)	5	(Girard & Allison, 2008) (Wurman, 1989)

4.2 Data gathering and sample demographic

Data from the research field were collected using an electronic questionnaire, and 326 valid responses were obtained for statistical analysis.

The results of Table 2 reveal that the participants of the age group 15-35 have obtained the highest rate of 75%, which indicates that the youth category is the most oriented towards online shopping. As for the gender of the respondents, it turns out that the percentage of males was approximately 32%, while 68% were females, which

means that females are more oriented towards electronic shopping compared to males. Finally, it is clear from the sample description results that most of the participants hold an undergraduate degree 56.1%.

Table (2). Sample demographic

Category	Item	Counts	%
Age	15-35	245	75.2
	36-55	72	22.1
	56-75	9	2.8
Gender	Male	103	31.6
	Female	223	68.4
Educational level	High school	64	19.6
	Undergraduate	183	56.2
	Postgraduate	79	24.2

5. Data analysis

Structural equation modeling (SEM) was performed using SmartPLS 4 software to analyze the data and test the hypotheses. The analysis was conducted in two stages. The standard model represented the first stage to verify its quality, while the structural model represented the second stage to test the hypotheses.

5.1 Measurement model

The PLS-SEM algorithm method was used to verify the quality of the model, depending on the consistency indicators.

Table 3 shows the convergent validity based on the loadings of the indicators on the latent constructs, which ranged between 0.62 and 0.81, which is higher than the recommended cut-off score of 0.60 (Awang, 2012). The TMI 4 indicator was excluded because it did not meet the required standard.

It is also evident that there is no multicollinearity between the variables, depending on the values of the variance inflation factor VIF, which ranged between 1.2 and 2.4, which are less than the threshold of five recommended by (Hair et al., 2011).

The results show that composite reliability is achieved in the latent variables based on CR values that exceed the recommended threshold of 0.70 (Nunnally, 1978).

Table (3). Convergent validity and reliability

Variables	Items	Outer loadings	VIF	Cronbach's alpha	CR (rho_a)	AVE
IA	IA1	0.777	1.755	0.847	0.849	0.619
	IA2	0.766	1.686			
	IA3	0.797	1.92			
	IA4	0.788	2.382			
	IA5	0.806	2.366			

TE	TE1	0.646	1.321	0.821	0.823	0.586
	TE2	0.792	1.733			
	TE3	0.81	2.077			
	TE4	0.814	2.151			
	TE5	0.752	1.786			
TMI	TMI1	0.615	1.21	0.684	0.70	0.513
	TMI2	0.757	1.316			
	TMI3	0.775	1.44			
	TMI5	0.709	1.241			

Table 4 demonstrates that the research model satisfies discriminant validity, with the square root of each construct's AVE (on the diagonal) exceeding the inter-construct correlations in the same row and column.

Table (4). Discriminant validity

Construct	IA	TE	TMI
IA	0.787		
TE	0.518	0.765	
TMI	0.426	0.516	0.716

Note: The diagonal is the square root of AVE

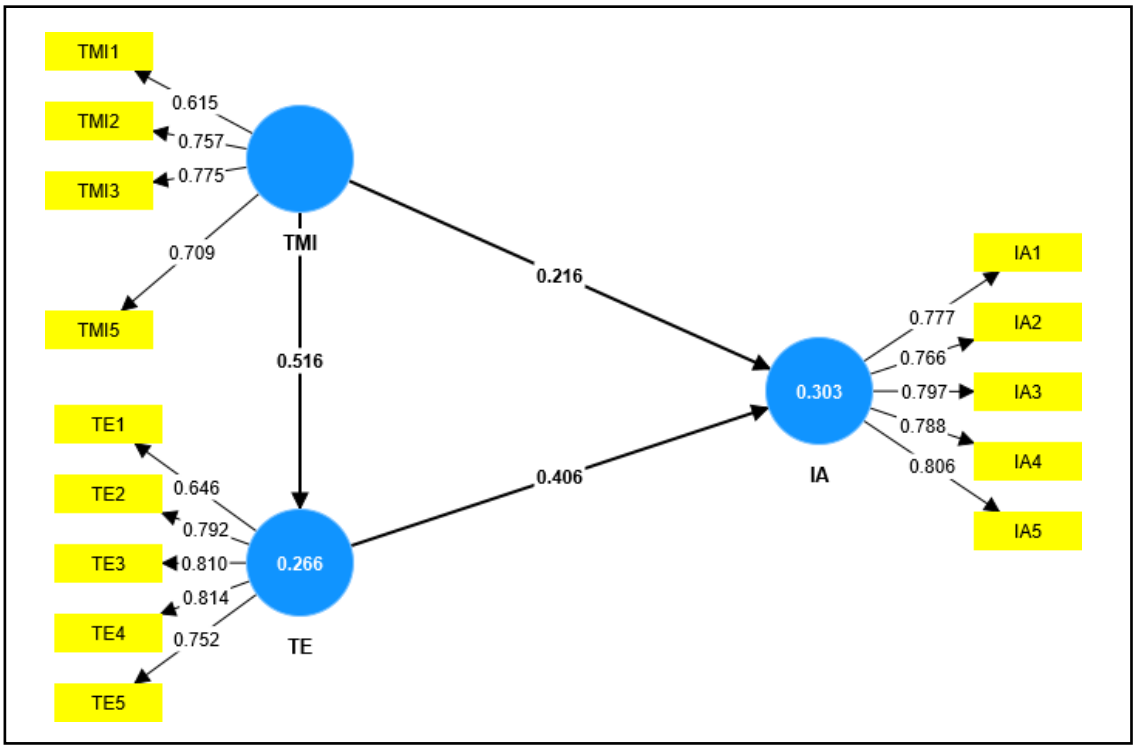


Figure (3). Algorithm method

5.2 Hypothesis Testing

The Bootstrapping method was used in SmartPLS software to test the hypotheses. It is clear from Table 5 and Figure 3 that there is an effect of too much information on information anxiety (β = 0.216, t = 3.865), which supports H1, and it is clear that too much information affects techno exhaustion (β = 0.516, t = 11.947), which supports H3. Finally, techno exhaustion has an effect on information anxiety (β = 0.406, t = 7.322), which means that H2 is acceptable.

Table (5). Hypothesis Test Results

Path	Beta	T statistics	P values	Decision
H1: TMI ➔ IA	0.216	3.865	0.000	Accepted
H2: TMI ➔TE	0.516	11.947	0.000	Accepted
H3: TE ➔ IA	0.406	7.322	0.000	Accepted

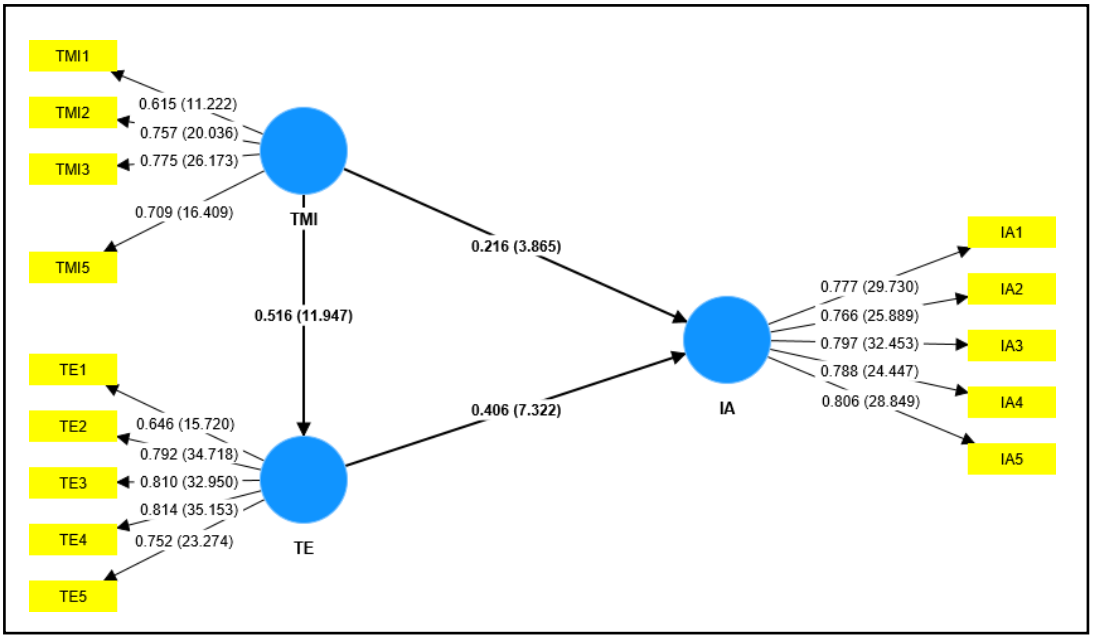


Figure (3). Bootstrapping model

6. Dissection

The results of the current study revealed that too much information leads to anxiety among online shoppers. This occurs due to the large amount of information shoppers receive, as well as the fact that product-related information, such as prices, is sometimes conflicting. This result is consistent with the findings of Swar et al., (2017). The results also showed that tech fatigue leads to anxiety among online shoppers, which causes confusion, impaired concentration, and information overlap. This result is consistent with Yang and Lin's (2018) study.

7. Conclusion

This study examined the effect of too much information and technology exhaustion on information anxiety among online shoppers. The results of the hypothesis testing revealed that the abundance of information related to products that online shoppers encounter leads to information anxiety due to the inability to distinguish the correct information. The exhaustion from using information technologies such as social networks also causes anxiety among them, due to the long time shoppers must spend to obtain the appropriate information. One of the implications of these results is that online shoppers should not expand their knowledge of product specifications on many sites, especially those that are not official, to reduce the distraction that may lead to information anxiety. We suggest relying on the original sites that sell the products, and it is also necessary to participate in communication groups that provide objective reviews of the products to be purchased.

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Appendix A: Research Questionnaire

	Too much information	
1	I am often distracted by the excessive amount of information available to me.	(Zhang et al., 2016) (Karr-Wisniewski & Lu, 2010)
2	I am often distracted by the excessive amount of information for business decision-making.	
3	I am overwhelmed by the amount of information I have to process daily.	
4	The amount of information available due to ICTs is overwhelming.	(Ayyagari, 2012)
5	ICTs create more information than I can cope with.	
	Technology Exhaustion	
1	I feel drained from activities that require me to use ICTs.	(Ayyagari, 2012)
2	I feel tired from my ICT activities.	
3	Working all day with ICTs is a strain for me.	
4	I am forced to change my work habits to adapt to new ICT solutions	(Mette et al., 2014)
5	I have a higher workload because of increased ICT complexity.	
	Information anxiety	
1	I am unable to understand the information required to complete the purchase.	(Girard & Allison, 2008) (Wurman, 1989)
2	I feel overwhelmed by the information I need to understand when purchasing products.	
3	I cannot determine where to find the information I need online.	
4	I am sure that the information I need exists on the internet, but I do not know where to find it.	
5	I know the information I need exists, but I cannot access it.	