Does eWOM influence entrepreneurial firms' rate of diffusion of innovation?
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Does eWOM influence the Diffusion Rate of Entrepreneurial Firms’ Innovation?

Abstract

Purpose This research investigates the influence of eWOM on the diffusion rate of innovation in the context of entrepreneurial firms in emerging markets. It examines a comprehensive model for the effect of eWOM dimensions (including Content, Intensity, and Positive/Negative Valence) on the diffusion rate. Thus, it provides new insights on how entrepreneurial firms can utilise eWOM as a communication tool to facilitate the diffusion rate of innovations in emerging markets.

Methodology A quantitative approach was adopted, consisting of 215 responses from Jordan. Data were analysed using Linear regression analysis tools.

Findings A significant relationship exists between eWOM dimensions (Content, Intensity, Positive Valence, and Negative Valence) and the Diffusion Rate of Innovations. In emerging markets, eWOM content highlights critical information regarding consumers’ sentiments towards new products (including features, price, design), which consumers utilise in judging innovations. Especially when there is a high volume of eWOM about a new product, consumers are likely to gain reassurances regarding their purchase decisions. Specifically, the valence of eWOM (including reviews, complaints, and suggestions) generate adoption/risk-aversion attitudes towards new products. Consequently, entrepreneurial firms must carefully analyse eWOM regarding their products and integrate them into their marketing strategy.

Originality This research extends the eWOM literature by developing a comprehensive model for the effect of eWOM dimensions on the diffusion of innovations. Additionally, it sheds new light on the effect of eWOM valence on consumers’ attitudes towards innovations. Finally, it provides significant theoretical and managerial implications and future research direction to deepen our understanding of the effect of eWOM on entrepreneurial firms.

Keywords eWOM, Diffusion of Innovations, Entrepreneurial firms, Emerging Markets

Paper type: Research Paper

1. Introduction

Entrepreneurial firms continuously engage in new product development because of its binding effect on the business's longevity, growth, and profitability (Crawford and Di Benedetto, 2016; Liao and Cheng, 2014; Chesbrough, 2006). They invest in risky innovation activities to develop products that fulfil emerging consumer needs (Sood and Tellis, 2005). However, entrepreneurial firms (particularly start-ups) increasingly face challenging conditions in entry to market embodied in slow diffusion rate and limited consumer acceptance of new products (Calantone et al., 2006; Hülsmann and Pfeffermann, 2011; Nguyen, 2019). Indeed, the failure rate of innovation ranges between 40-90% (Gourville, 2006). Such figures are attributed to high uncertainty and perceived risk associated with adopting innovative ideas, specifically those from entrepreneurial firms with limited brand associations (Eng and Quaia, 2009). Marketing communication tools (such as social media) plays a
significant role in the new product development process (Chaffey and Ellis-Chadwick, 2019). Thus, managers are encouraged to invest heavily in modern marketing communication strategies to increase awareness of new products and speed up their diffusion into the market (Drechsler et al., 2013; Pantano et al., 2018).

Firms’ ability to produce new products in the proper form and technology is critical to fulfilling consumer needs (Crawford and Di Benedetto, 2016). Nevertheless, the success of new products hinges on communication between potential consumers in a target market regarding the new idea (Rogers, 2003). People’s perceptions of innovations (such as attributes, features, design) trigger feelings and sentiments for individual consumers (Cloughton, 2020). Customers’ experience with new products incorporates a social dimension formulated from the opinions of others regarding new ideas (Verhoef et al., 2009). Thus, social communications moderate customers’ perceptions of new products, leading to different adoption behaviours such as Early-adopters, Early-majority, Late-majority, and Laggards (Rogers, 2003).

The importance of communications in social systems regarding new ideas increased significantly with the development of digital platforms (websites and social media) (Dennis et al., 2016). Digital platforms extend customers’ social circle to include different users of the internet (including influencers, brand ambassadors) (Hong et al., 2020). Thus, customers seek access to Electronic Word-of-Mouth (eWOM) regarding new products from different internet users before making judgements of a product (Lemon and Verhoef, 2016). eWOM is defined as “any positive or negative statement made by potential, actual, or former customer which is available to a multitude of people via the internet” (Henning-Thurau et al., 2004, p.39). It includes recommendations, reviews, and suggestions made by internet users regarding new products and is perceived as a specific and trustworthy source of information (Doh and Hwang, 2009). Interactions with eWOM translate into cognitive and emotional responses that consumers rely on to make different decisions, including adoption/avoidance of new products (Herhausen et al., 2015; Ngarmwongnoi et al., 2020).

There is growing evidence that consumers exploit eWOM at different stages of the customer journey to reduce the perceived risk of purchase (Hall et al., 2017; Nyilasy, 2006). User-generated eWOM helps to reduce uncertainty in purchase decisions because of their social influence on the feelings of others (Wang et al., 2015; Rogers, 2003). An interaction with eWOM creates an experience with the new product beyond its physical attributes (Verhoef et al., 2009). Content created by internet users (including peers, influencers, brand ambassadors) is utilised to formulate perceptions of new products, including their utility and image (Hong et al., 2020; Huete-Alcocer, 2017; Jalilvand and Samiei, 2012). This experience is moderated by aspects of the quality and quantity of available eWOM regarding new products (Bulut and Karabult, 2018) translating into cognitive and emotional decisions, including adoption/avoidance (Herhausen et al., 2015; Ngarmwongnoi et al., 2020).

Scholars argue that eWOM plays a significant role in the diffusion rate and acceptance of innovations (Dennis et al., 2016; Homburg et al., 2010). A recent report indicates that 76% of consumers trust internet recommendations more than family and friends’ recommendations, and 91% of consumers trust the company more when reading positive reviews (Murphy, 2020). Both organic (naturally generated) and amplified (marketers influenced) eWOM stimulate consumers’ intentions to adopt novel ideas as they reduce customers’ perceived risks of adoption, including monetary and temporal losses (Corcoran, 2009; Nguyen, 2019).

In addition, social media platforms (such as Facebook, Instagram, Snapchat) facilitated the spread of different eWOM regarding new products. These platforms increased customers’ ability to read/share different views regarding new products on the internet (Rapp et al., 2013). Thus, available eWOM contributes to the brand
equity of products, which moderates consumers’ search and purchase intentions (Chaffey and Ellis-Chadwick, 2019). People’s perceptions of innovations create a holistic impression of the brand (Dalman et al., 2020), which adds to the complexity of consumers’ trust in innovations. Therefore, there is growing evidence that eWOM moderates the diffusion rate of innovation into markets (Lamberton and Stephen, 2016; Stephen and Lehmann, 2009).

The implication of innovation failure on entrepreneurial firms extends beyond financial losses to include its brand equity (Bambauer-Sachse and Mangold, 2011). Consequently, these firms are urged to focus on interpersonal communications such as eWOM to facilitate the diffusion rate of their innovations (Mazzarol, 2011). The effectiveness of user-generated eWOM (such as visual and audio content) in creating different perceptions of new products is notable in the literature (Hussain et al., 2017; Ngarmwongnoi et al., 2020). For instance, empirical studies found a significant effect of eWOM (including product reviews and recommendations) on consumers’ perception of the product, purchase, and recommendation intentions (Erkan and Evans, 2018; Ruiz-Mafe et al., 2018). In addition, a positive relationship exists between eWOM on customers’ decision-making process, including search, purchase, and recommendations, has been reported in the literature (Hussain et al., 2017; Ngarmwongnoi et al., 2020). Likewise, negative online reviews by opinion leaders on the internet (such as influencers and brand ambassadors) facilitate the rate of failure of new products in the market (Dalman et al., 2020).

Although there is growing evidence that eWOM can influence the acceptance of innovations (Mazzarol, 2011; Smilansky, 2017; Zena and Hadismarto, 2013), there is a need to investigate the dynamics which eWOM influence the diffusion of innovations in the context of entrepreneurial firms. This research is fundamental in emerging markets such as Jordan, where the economic conditions amplify the risk associated with new product adoption (Shankar and Narang, 2020). Consumers in emerging markets seek innovations that are cost-effective and help them fulfil their needs effectively. Indeed, empirical evidence suggests that consumers in emerging markets like Thailand rely on eWOM to learn more about the products, leading to different shopping behaviours (Ngarmwongnoi et al., 2020). Thus, further attention should be given to emerging markets to help entrepreneurial firms succeed and increases the global economic growth (Shankar and Narang, 2020).

eWOM serves as a cost-effective communication tool to help entrepreneurial firms facilitate consumers’ awareness and adoption of their ideas (Chaffey and Ellis-Chadwick, 2019). However, there is limited understanding of how entrepreneurial firms can utilise eWOM dimensions to enhance the diffusion rate of their innovations and increase their chances of success in emerging markets. This research context remains under-researched, with most studies exploring the implications of eWOM from the customers’ perspective in terms of customers’ search and purchase intentions. The shortfall in knowledge is regrettable from a managerial standpoint, given the challenges that entrepreneurial firms face in the new product development process.

Against this background, this research aims to examine the effect of eWOM from an entrepreneurial firms’ perspective in the emerging context of Jordan. As customers’ experience is moderated by demographic and situational variables (Verhoef et al., 2009), understanding the effect of eWOM on the diffusion of innovation in emerging countries extend our knowledge regarding the effect of eWOM across different countries. This research help companies leverage the usefulness of eWOM as part of their diffusion strategy. Further, we focus on entrepreneurial firms at the start-up phase because they are challenged with their limited brand equity and financial resources (Ostgaard and Birley, 1994). We focus on entrepreneurial start-ups in the e-services industry in Jordan
as it compromises technological advancements that often influence consumers’ adoption of innovation (Erkan and Evans, 2016). Consequently, this research provides theoretical and managerial including:

1. Contrary to previous studies (Agag and El-Masry, 2016; Andreassen and Streukens, 2009; Chang and Wu, 2014; Goyette et al., 2010; Mazzarol, 2011; Rogers, 1983; Wang et al. 2010), this research examines all eWOM dimensions in one comprehensive model.

2. It extends the eWOM literature by examining the effect of eWOM dimensions on the diffusion of innovation dimension in the entrepreneurial firms’ context. Thus, it highlights the opportunities and challenges that face entrepreneurial firms with eWOM.

3. It develops our knowledge of the effect of eWOM in emerging markets, considering the economic and sociological challenges these markets face (Shankar and Narang, 2020).

2. Theoretical Background

2.1 Diffusion of Innovations

Nehemiah et al. (2017) believe that the antecedents to the adoption/diffusion process of new ideas include: the relative advantages (which reflects the perceived benefits), the complexity (which reflects the difficulty level), the compatibility (indicates the level of suitability with what one usually uses), the observability (the ability to assess the implication of the innovation), and the trialability (indicates the purchasing of the product and trying it). Nevertheless, research points to the moderating role of social communications regarding these antecedents on the diffusion process into new markets (Smilansky, 2017; Rogers, 2003).

The diffusion of innovation is a social and psychological process that anticipates consumer behaviour to adopt a new item by focusing on consumers patterns of adoption (Rogers, 1995). It involves interpersonal communications (such as eWOM) and imitation of behaviours (Mazzarol, 2011). In a social system, communications between target customers regarding new ideas trigger different internal responses towards the new product regarding its utility, image, price, and usability (Huete-Alcocer, 2017; Jalilvand and Samiei, 2012). Consequently, there is growing acceptance that social communications are an essential factor in consumers’ acceptance of new ideas (Hussain et al., 2017).

Accessibility to the internet amplified the role of social communications on the diffusion rate of innovations. Online information posted by other consumers regarding new products is perceived as more reliable than companies’ marketing information (Rynarzewska, 2019). Thus, it provides reassurances to consumers regarding their purchase decisions, thereby influencing the diffusion rate of new ideas. Recent studies (Ngarmwongnoi et al., 2020; Bataineh, 2015) provide insights into how eWOM influences consumers’ decisions towards new products in the cosmetic industry by judging specific dimensions of the eWOM, including credibility and quantity. However, our understanding of how companies can make use of eWOM to facilitate the diffusion rate of innovations remain unclear. Hence, understanding the role of eWOM dimensions on the diffusion of innovation is necessary, particularly in emerging economies where challenging financial situations increase the perceived risk of new product/service adoption.

2.2 The Increasing Role of eWOM in Consumer Adoption

The continuous development of digital channels facilitated customers’ access to marketing information beyond those offered by companies (Hussain et al., 2017). As a result, customers became empowered to share
their opinions voluntarily about the product/service, which influenced the decision-making journey of consumers (Ngarmwongnoi et al., 2020; Lemon and Verhoef, 2016). Therefore, the internet enabled people to disseminate their thoughts, beliefs, experiences, and recommendations about a product, service, or brand by evaluating the concerned organisation online (Schindler and Bickart, 2005).

eWOM entails “any positive or positive/negative statements made by potential, an actual or former customer which is available to a multitude of people via the internet” (Hennig-Thurau et al., 2004, p.39). Customers interact with this form of communication throughout the consumer decision-making journey as they seek reassurance about the product/service beyond their social group (Nguyen, 2019). Hence, this form of organic and non-commercial communication between customers is becoming a centrepiece in marketing because of the perceived trustworthiness of online information (such as reviews, blogs and tutorials) compared to traditional marketing communications (Nam et al., 2020).

eWOM allows companies to involve the early users of innovations and consumers in a two-way conversation to diffuse the inventions quickly through the strength of Web 2.0 tools (Riegner, 2007). Empirical evidence shows that loyal customers’ word-of-mouth (WOM) is critical in promoting innovations and sharing recommendations, which increased the diffusion rate of innovations (Arndt, 1967; Mazzarol, 2011; Zena and Hadisumarto, 2013; Smilansky, 2017). Consumers seek eWOM across the decision-making process to develop perceptions of the utility of the product/service (Erkan and Evans, 2016). Opinion leaders’ recommendations accelerate the flow of information of specific products or services (Van Eck et al., 2011), which increases develops positive purchase intents (Kim et al., 2019).

However, eWOM effect on consumer’s adoption is determined by four essential dimensions including: content, intensity, positive valence, negative valence. Consumers’ perception of these dimensions alters their attitude towards new ideas, consequently influencing the diffusion rate of innovation. Previously mentioned studies mainly focused on the relationship between specific dimension of eWOM and consumer adoption. Nonetheless, there is limited research that investigate the effect of all dimensions on the diffusion rate of innovation in a comprehensive model. Accordingly, the following research framework has been developed to investigate all relationships proposed in earlier studies (see Figure 1).

![Figure 1 Research Framework Illustrating the Role of eWOM Dimensions on the Diffusion Rate of Innovation](image-url)
2.2 eWOM Content and Diffusion of Innovation

The development of social media platforms significantly increased consumers' exposure to information (Kim et al., 2018). Consumers in their eWOM review the characteristics of products and services (such as the price, image, and utility) (Cheung et al., 2009), and judge adoption intentions accordingly (Ismagilova et al., 2019). eWOM dialogues typically include reviews about the value or the quality of the offered services, and requests of additional information (Andreassen and Streukens, 2009). Diffusion of innovation is a social process that involves interpersonal communications, social relationships, positive eWOM, and imitation of behaviours (Mazzarol, 2011; Rogers, 2003). As such, eWOM is fundamental in shaping consumers’ decisions (Kim et al., 2019).

However, the properties of the eWOM (such as words, emotions, feelings, usefulness, content information, and content entertainment) are all considered very critical for judging the perceived usefulness of eWOM (Bu and Thaichon, 2020; Gabbott and Hogg, 2000; Ismagilova et al., 2019; Mason and Davis, 2007). A positive content of eWOM reduces the perceived risk of adoption and increase purchase intentions (Bulut and Karabulut, 2018; King et al., 2014). For instance, consumers can be more receptive to eWOM professionally written with minimal stylistic mistakes (Ismagilova et al., 2019). On the contrary, aggressive, and malicious testimonials regarding new products facilitate risk-aversion behaviour and harm the brand’s equity (Dalman et al., 2020; Van Eck et al., 2011). Despite reporting the effect of content on adoption, little is known regarding the consequent effect of content on the diffusion rate of innovations. Against the abovementioned arguments, we hypothesise a direct effect of eWOM content on entrepreneurial firms’ product diffusion rate. 

**H1: The contents of eWOM affect the diffusion rate of entrepreneurial firms’ innovations.**

2.3 eWOM Intensity and Diffusion of Innovation

Social media platforms are constantly exposing consumers to the increasing volume of eWOM (Kim et al., 2018). The volume of eWOM reflects evidence of the popularity of new ideas among internet users (Fan et al., 2013). Defined as “the popularity of the product or service” (Ismagilova et al., 2019, p.4), the intensity of eWOM plays a significant role in influencing consumers' behaviour in the decision-making journey. The frequency and interval of eWOM regarding product/services on the internet affect consumers’ perceptions of product/service favourability and popularity (Fan et al., 2013; Lee et al., 2009). As customers can find a plethora of information online regarding a product/service, their perception of the credibility of eWOM is influenced (Bataineh, 2015). Consequently, their intentions to adopt new products or services is affected by the credibility and availability of a plethora of information regarding a product on the internet (Liu and Zhou, 2012; Hu et al., 2012; Flanagan et al., 2014; He and Bond, 2015).

Customers are likely to accept user-generated content as part of their decision-making process (Rynarzewska, 2019). However, the intensity of eWOM influences plays a role in adoption intentions (Eng and Quaia, 2009). A high volume of eWOM reduces consumers’ uncertainty with their new product offerings (Brexendorf et al., 2015; Erdem et al., 2004), thus facilitating innovation diffusion. Furthermore, increasing the intensity of eWOM using organic and amplified eWOM in the launch phase of the new product development accelerates the spread of early responses towards innovations on the internet (Bataineh, 2015; Bulut and Karabulut, 2018; Crawford and Di Benedetto, 2016). Meanwhile, limited user-generated discussion regarding innovations raises consumers’ concerns regarding the social acceptance of the product and its utility (Fan et al.,
Accordingly, entrepreneurial firms should carefully examine the intensity of eWOM about their new products as it could directly affect their brand equity and diffusion rate.

**H2**: eWOM intensity affects the diffusion rate of entrepreneurial firms’ innovations

### 2.4 eWOM Valence and Diffusion of Innovation

Consumers' sentiments towards products/services can be positive or negative. Ismagilova *et al.* (2019) noticed that the eWOM dialogues differ in valence (positive versus negative valence). Positive eWOM is the "customers' willingness to recommend the product to others" via the internet (Seo *et al.*, 2020). In contrast, negative eWOM is "a display of consumer dissatisfaction about a product or service and the more dissatisfied the consumer is, the higher is the number of negative words, images, and emotions in the eWOM" (Nadarajan *et al.*, 2017, p.394-395). Positive eWOM reviews often contain idealized evaluations of products or services, whilst negative eWOM reviews usually involve adverse criticisms and unpleasant evaluations (Sparks and Browning, 2011).

Earlier scholars studied the relationship between the valence of eWOM and consumers' intentions of new products adoption (Bigne *et al.*, 2016; Hamby *et al.*, 2015; Hu *et al.*, 2012; Jones *et al.*, 2009; Ladhari and Michaud, 2015; Mauri and Minazzi, 2013). For instance, Chang and Wu (2014) found that the consumers' intentions to interact with Starbucks's service is guided by their analysis of the negative eWOM available. Similarly, Nadarajan *et al.* (2017) found that negative eWOM has a substantial impact on consumer's switching intention toward mobile service providers. Indeed, consumers commonly engage with negative eWOM with failing products, resulting in significant damage to the company's brand equity and future innovation success (Dalman *et al.*, 2020).

On the contrary, positive eWOM facilitate consumer adoption of new products by reducing the uncertainty related to price and utility. Ahmad *et al.* (2020) found that positive eWOM regarding the airline and its on-board services significantly influences airline e-ticket buying decisions. Similarly, a positive eWOM can influence the pricing strategy of innovations to manipulate the diffusion rate of green innovations (Hong *et al.*, 2020). With the perceived uncertainty of innovations, consumers may depend on the valence of eWOM to determine their intentions to search and purchase innovations. Consequently, it is argued that the valence of eWOM could influence the diffusion rate of innovations, particularly with ideas requiring high technical knowledge such as e-service.

**H3a**: The positive valence of eWOM affects the diffusion of entrepreneurial firm's innovations.

**H3b**: The negative valence of eWOM affects the diffusion of entrepreneurial firm’s innovations.

### 2.5 eWOM and Diffusion of Innovation

Entrepreneurial firms have an opportunity to target markets using databases, opinion leaders, and the power of online media tools and generate eWOM in the mass consumer market (Ainsworth, 2007). Small innovative companies are more likely to continue the innovation diffusion process when they believe that they have the capabilities, essential resources, and support from adopter customers, who appreciate their new goods (Choi and Shepherd, 2004). However, in their early stages, entrepreneurial firms increasingly face stressful conditions while diffusing their new products and services due to the limited marketing budget, limited human and financial resources, and insufficient support of brand associations (Mahajan and Muller, 1979; Ostgaard and Birley, 1994).
Moreover, firms’ managers experience significant challenges in generating positive WOM about the new products and services (Hülsmann and Pfeffermann, 2011; Nguyen, 2019). Risky innovations with a high level of uncertainty and perceived risk affect consumers’ opinions to adopt new technology (Eng and Quaia, 2009). eWOM offers marketers the opportunity to create non-commercial contents that facilitate consumers’ purchase intentions over the customer journey (Ngarmwongnoi et al., 2020). With the growing acceptance of the role of eWOM on consumer behaviour, entrepreneurial firms can utilise the dimensions of eWOM to increase the diffusion of their innovations.

**H4: eWOM influences the diffusion rate of entrepreneurial firms’ innovations.**

3. Methodology

3.1 Measures

A thorough review of the eWOM literature formed the basis for scale developments for each factor investigated in this research. A Likert-scale of perceived acceptance from 1 to 5 was used, where the (5) degree represents (Strongly agree) and (1) degree represents (Strongly disagree). A total of 37 items were adapted from literature (Atkinson, 2007; Goyette et al., 2010; Min et al., 2019) to test the relationships proposed in the research framework. Scale items were pre-tested with 20 respondents from academic and non-academic backgrounds to check for the clarity and wording of the items.

3.2 Sampling and Data Collection

A survey-based methodology using a structured questionnaire was taken to investigate the relationships proposed in this study. The context for this research is Jordan, which is categorised as an emerging market by the MSCI Index 2020 (Amadeo, 2020). Further, we focused on the e-services industry, given that most entrepreneurial firms in Jordan are in the service technology domain. Respondents from Jordanian and non-Jordanian backgrounds were asked to evaluate on their perceptions of the effect of eWOM dimensions on their adoption of innovative services in Jordan. Consequently, the relationship between eWOM dimensions and the diffusion rate of innovations were captured.

Over 400 respondents were contacted to take part in this study. They were asked to highlight current services they have engaged with and their perceived use of eWOM during their decision-making process. Two control measures were used to increase the validity of the study:

I. Respondents need to have adopted new services over the past month. Literature suggest that the recency of the customer journey can influence customers’ recall of the interactions in the decision-making journey (Puccinelli et al., 2009; Stein and Ramaseshan, 2016). As such, respondents can provide more accurate insights into the factors that influenced their perception of eWOM and adoption of innovation.

II. The questionnaire was distributed across online platforms including Facebook and LinkedIn to ensure that participants are present on social networks. As such, we ensure that participants have engaged, or were exposed to eWOM in the past.

Upon data cleaning, 215 valid responses were entered into the data analysis stage. Table 1 highlights the demographics of the final sample for this study.
4.0 Data Analysis

4.1 Demographic Analysis

In line with recent work in emerging markets (Ngarmwongnoi et al., 2020), more females (134, 62.3%) took part in this research compared to males (81, 37.7%). Similarly, most respondents were millennials from the age group 18-25 and 26-33 years. Such findings are expected, given that millennials rely heavily on the internet and social platforms to make their shopping decisions (Hall and Towers, 2017; Veloutsou and McAlonan, 2012). In addition, the lowest monthly income group (No Income) and (500 JOD or less) highly contributed to the study with over 54% of the sample. This data supports our argument that the challenging financial situations in emerging markets influence consumers’ willingness to engage in eWOM to adopt new innovations.

Table 1 Demographic Analysis

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Nationality</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>134</td>
<td>62.3%</td>
<td>Jordanians</td>
<td>186</td>
<td>86.5%</td>
</tr>
<tr>
<td>Male</td>
<td>81</td>
<td>37.7%</td>
<td>Non-Jordanians</td>
<td>29</td>
<td>13.5%</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>100%</td>
<td>Total</td>
<td>215</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Educational Level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 – 25</td>
<td>85</td>
<td>39.5%</td>
<td>High school or below</td>
<td>5</td>
<td>2.30%</td>
</tr>
<tr>
<td>26 – 33</td>
<td>44</td>
<td>20.5%</td>
<td>Diploma</td>
<td>18</td>
<td>8.40%</td>
</tr>
<tr>
<td>34 – 41</td>
<td>35</td>
<td>16.3%</td>
<td>Bachelor’s Degree</td>
<td>105</td>
<td>48.8%</td>
</tr>
<tr>
<td>42 – 49</td>
<td>18</td>
<td>8.40%</td>
<td>Postgraduate Degree</td>
<td>87</td>
<td>40.5%</td>
</tr>
<tr>
<td>50 and more</td>
<td>33</td>
<td>15.3%</td>
<td>Total</td>
<td>215</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monthly Income (JOD)</th>
<th>Frequency</th>
<th>Percentage</th>
<th>e-Services used (More than 1 service can be selected)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No income</td>
<td>51</td>
<td>23.7%</td>
<td>Educational</td>
<td>177</td>
<td>82.3%</td>
</tr>
<tr>
<td>Less than 500</td>
<td>66</td>
<td>30.7%</td>
<td>Commercial</td>
<td>98</td>
<td>45.6%</td>
</tr>
<tr>
<td>501 – 1000</td>
<td>50</td>
<td>23.3%</td>
<td>Banking</td>
<td>111</td>
<td>51.6%</td>
</tr>
<tr>
<td>1001 – 1500</td>
<td>17</td>
<td>7.90%</td>
<td>Recreational</td>
<td>91</td>
<td>42.3%</td>
</tr>
<tr>
<td>1501 – 2000</td>
<td>6</td>
<td>2.80%</td>
<td>Weather</td>
<td>104</td>
<td>48.4%</td>
</tr>
<tr>
<td>Over 2000</td>
<td>25</td>
<td>11.6%</td>
<td>Transportation</td>
<td>72</td>
<td>33.5%</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>100%</td>
<td>Other(s)</td>
<td>60</td>
<td>27.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>713</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.1 Data Adequacy, Efficiency, and Reliability

Several tests were conducted on the cleaned data to check the data adequacy and efficiency for regression analysis assumptions. Using the VIF and Tolerance tests, no significant correlation was reported between the independent variables. Similarly, the data was checked for normal distribution by calculating the skewness coefficient (<±1). Table 2 displays the outcomes of these analyses.

Table 2 Results of Variance Inflation Factor, Tolerance, Skewness

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>VIF</th>
<th>Tolerance</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWOM content</td>
<td>2.167</td>
<td>0.461</td>
<td>-0.572</td>
</tr>
<tr>
<td>eWOM intensity</td>
<td>1.698</td>
<td>0.589</td>
<td>-0.987</td>
</tr>
<tr>
<td>eWOM positive valence</td>
<td>2.498</td>
<td>0.400</td>
<td>0.621</td>
</tr>
<tr>
<td>eWOM negative valence</td>
<td>1.075</td>
<td>0.930</td>
<td>-0.4510</td>
</tr>
</tbody>
</table>

Next, the validity of the scales of the scales was computed. The research framework incorporated several dimensions of eWOM in one model. Since the items were developed and adapted from the literature, an
exploratory factor analysis was used to determine the validity of the scales (Dimitrov, 2014). A Principal Axis Factoring (PAF) tool was used, and five factors were extracted with eigenvalues exceeding the minimum threshold of 1.0 (see Table X). An item is considered significant if the factor loading exceeds 0.5 (Hair et al., 2011). Likewise, cross-loading items were dropped from the analysis.

Overall, the cumulative variance explained was 73.086%, which is greater than the prescribed minimum of 50.0% (Hair et al., 2011), thereby confirming the strength of the factors extracted. All five factors were retained with their measurement items scoring above 0.5. Next, the internal validity of the factors and their measurement scale items were checked against the Cronbach’s alpha value (see table 3). All factors scored $\alpha > 0.70$, indicating that each factor’s scale items retained in this research are internally consistent and reliable.

**Table 3** Cronbach’s Alpha Values for Retained Factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWOM content</td>
<td>.951</td>
</tr>
<tr>
<td>eWOM Intensity</td>
<td>.881</td>
</tr>
<tr>
<td>eWOM Positive valence</td>
<td>.932</td>
</tr>
<tr>
<td>eWOM Negative Valence</td>
<td>.882</td>
</tr>
<tr>
<td>Diffusion of Innovation</td>
<td>.935</td>
</tr>
</tbody>
</table>

### 3.3 Means and Standard Deviation

The descriptive analysis included standard deviations, means, and the rank of the dependent and independent variables in this study to describe the information in a meaningful way. To determine the importance of each variable, three-levels of importance, low (1.00 – 2.33), medium (2.34 – 3.67), and high (3.68 – 5.00), were calculated by this equation: \([5-1]/3 = 1.33\). Accordingly, the variables were ranked in terms of their mean value as highlighted in table 4. The total score of the mean and standard deviation of eWOM is (3.23) and (0.634), respectively, while the descriptive data is as exhibited below in Table 4 for eWOM dimensions. eWOM factors are Medium, but the eWOM negative valence factor was classified first. The total score of the mean and standard deviation of the diffusion of innovations variable is (3.47) and (0.714), respectively.

**Table 4** Means and Standard Deviations of eWOM Dimensions and Diffusion of Innovations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Importance</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWOM Content</td>
<td>3.49</td>
<td>0.819</td>
<td>Medium</td>
<td>3</td>
</tr>
<tr>
<td>eWOM Intensity</td>
<td>3.17</td>
<td>0.894</td>
<td>Medium</td>
<td>4</td>
</tr>
<tr>
<td>eWOM Positive Valence</td>
<td>3.50</td>
<td>0.839</td>
<td>Medium</td>
<td>2</td>
</tr>
<tr>
<td>eWOM Negative Valence</td>
<td>3.49</td>
<td>0.818</td>
<td>Medium</td>
<td>1</td>
</tr>
<tr>
<td>eWOM (Aggregate)</td>
<td>3.23</td>
<td>0.634</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Diffusion of innovations</td>
<td>3.47</td>
<td>0.714</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

### 4.1 Testing hypotheses

Multiple linear regression was used to determine whether the hypotheses of this research are accepted or not. The principle states that if the significance’s value (p) does not exceed 0.05, the hypotheses are accepted. Additionally, to attain further reassurances in the results, a composite variable of eWOM was calculated using the dimension of eWOM (Content, Intensity, Positive Valence, Negative Valence) and tested against the Diffusion of Innovation to check if an overall relationship exists (see table 5).
Table 5 The Results of the Hypotheses

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>(β)</th>
<th>p</th>
<th>R²</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: eWOM Content → Diffusion of Innovations</td>
<td>0.644</td>
<td>0.000</td>
<td>0.415</td>
<td>Accepted</td>
</tr>
<tr>
<td>H2: eWOM Intensity → Diffusion of Innovations</td>
<td>0.463</td>
<td>0.000</td>
<td>0.215</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3a: eWOM Positive Valence → Diffusion of Innovations</td>
<td>0.639</td>
<td>0.000</td>
<td>0.409</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3b: eWOM Negative Valence → Diffusion of Innovations</td>
<td>0.097</td>
<td>0.000</td>
<td>0.009</td>
<td>Accepted</td>
</tr>
<tr>
<td>H4: eWOM Composite → Diffusion of Innovations</td>
<td>0.670</td>
<td>0.000</td>
<td>0.449</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Table 5 portrays the essential information (β coefficient and p value) for the strength and significance of the relationships in the theoretical framework. The β reflects the percentage of change in the diffusion of innovations for a unit change in the eWOM content, intensity, positive valence, and negative valence. In this research, the β of eWOM content intensity, positive valence, and negative valence have reached 0.644, 0.463, 0.639, and 0.097, respectively. This indicates that there are predicted increases by 64.4%, 46.3%, 63.9%, and 9.7% in the diffusion rate of innovations for every increase in the eWOM dimension. All relationships were significant at p<0.01. Therefore, this research validates the hypothesis related to the effect of eWOM on the diffusion rate of innovations.

It is noteworthy that the most significant change resulted from eWOM Content and Positive Valence. The results indicate that people’s positive testimonials on the internet (including photos, videos, professional language) facilitate consumers’ acceptance of the product—consequently, the diffusion rate of new product increase given the effect of positive testimonials on brand equity. Nevertheless, contrary to previous studies (Dalman et al., 2020), negative valence had the smallest β coefficient (0.097). This result is surprising as consumers adopt a risk-aversion approach when engaging with negative testimonials towards new products.

5. Discussion

This research provides several implications for theory development. Whilst previous studies acknowledged the influence of eWOM from a customer perspective (Hussain et al., 2017; Ngarmwongnoi et al., 2020), there is a scarcity of research on how entrepreneurial firms can harness the power of eWOM to facilitate the diffusion of their innovations. Building on established theories in the literature, a research framework was developed to enrich our understanding of the relationship between eWOM and the diffusion of innovation.

Previous studies focused on the role of content and intensity of eWOM on consumers acceptance of eWOM (Ngarmwongnoi et al., 2020). Nevertheless, the comprehensive framework developed in this study highlights the role of eWOM valence. Specifically, this research discussed the effect of positive/negative on the diffusion rate of innovation, extending our understanding of the differences in the impact of positive/negative eWOM on customers' attitudes towards new products. Likewise, the quantitative findings provide further statistical evidence for the relationships between the variables of eWOM and the rate of innovation diffusion highlighted in previous studies (Agag and El-Masry, 2016; Andreassen and Streukens, 2009; Chang and Wu, 2014; Wang et al., 2010), yet in different context such as emerging markets. Accordingly, the findings of this research have several theoretical and managerial implications discussed as follows.

5.1 Theoretical Implications

This research provides interesting perspectives on the role of eWOM dimensions on the diffusion rate of start-ups’ innovations. First, several studies recognized that the properties of the message, such as words,
emotions, feelings, usefulness, content information, and content entertainment are all considered as very critical for eWOM content (Bu and Thaichon, 2020; Ismagilova et al., 2019; Mason and Davis, 2007; Gabbott and Hogg, 2000). As such, eWOM content plays a role in influencing consumers’ intention to adopt new products or services (Cheung, 2014; Frasquet et al., 2015; Gunawan and Huang, 2015; Lee et al., 2011; Mafael et al., 2016; Park and Lee, 2008, 2009).

The result of this study highlights that the strongest and significant change in the diffusion of innovation comes from consumers’ perception of eWOM content (p<0.01). Indeed, Andreassen and Streukens (2009) found that firms should evaluate attractive eWOM content as it highlights the product’s competitive advantage from a consumer perspective. Thus, entrepreneurial firms need to constantly evaluate and monitor the content of eWOM regarding their new innovations, to adapt their marketing content and facilitate the diffusion rate of new products. However, further research should investigate the effect of different content styles (photos vs. videos, formal vs. informal language) and its effect on entrepreneurial firm’s brand equity.

Second, the frequency of mentioning the eWOM reviews makes it more attractive (Cheung and Thadani, 2012), which indicates the demand level of new products and services (Ismagilova et al., 2019). He and Bond (2015) noted the effect of eWOM intensity on consumers’ intention to watch and recommend new movies. Furthermore, earlier literature presented the critical impact of eWOM intensity on consumers’ intention to adopt innovations (Flanagin et al., 2014; Liu and Zhou, 2012; Hu et al., 2012). Hussain et al. (2017) argue that eWOM intensity influence consumers’ perception towards the favourability and authenticity of innovations.

Accordingly, the result suggests that eWOM intensity significantly influences consumers’ adoption of innovations, consequently accelerating the diffusion of innovations (p<0.01). The findings encourage entrepreneurial firms to develop strategies that encourage the intensity of eWOM of their new products. Likewise, it provides new research direction to investigate the effect of different approaches to increase the volume of eWOM (such as social media campaigns and affiliate marketing using influencers and brand ambassadors) on eWOM generation. Such research is imperative given the changing consumer preferences towards digital platforms (Chaffey and Ellis-Chadwick, 2019; Dennis et al., 2016).

Third, in terms of eWOM valence, this research sheds new light on the different effects of positive/negative testimonials on the diffusion rate. Ismagilova et al. (2019) noticed that the eWOM dialogues differ in valence (positive versus negative valence). Scholars argue that the valence of eWOM influences consumers’ intention to adopt new products or services (Bigne et al., 2016; Hamby et al., 2015; Ladhari and Michaud, 2015; Mauri and Minazzi, 2013; Hu et al., 2012; Jones et al., 2009; Lee and Youn, 2009). A positive testimonial regarding a new product increases consumer’s trust in innovations, therefore boosting the brand equity of the product (Ahmad et al., 2020; Hong et al., 2020). Meanwhile, negative testimonials harm new products’ reputations as consumers adopt a risk-aversion approach towards adoption (Dalman et al., 2020).

Consequently, this research highlights the significant effect of positive and negative eWOM on the diffusion of innovation (p<0.01). The valence of eWOM reflects consumers’ sentiments towards new products/services, guiding other consumers’ decisions towards innovation adoption (Van Eck et al., 2011; Jeong and Jang, 2011). Eng and Quaia (2009) and Mazzarol (2011) found that small entrepreneurial firms can rely on positive WOM in their early stages to lead customers towards successful adoption of innovation. However, in line with Nadarajan et al. (2017), companies should pay significant attention to negative eWOM. It could spark risk-aversion intentions and slow down the diffusion rate of innovation. Future research should carefully evaluate
consumers’ choice of accepting negative testimonials and how they judge them. The findings of such research help companies better develop reactive strategies towards negative eWOM.

Finally, this research confirms the propositions made by previous studies (Bu and Thaichon, 2020; Nam et al., 2020; Mazzarol, 2011; Van Eck et al., 2011) regarding the role of WOM on the diffusion of innovation. By focusing on eWOM in the services context, this study pins the significant impact of eWOM dimensions on the rate diffusion of innovations. eWOM affects the decision-making process (Ngarmwongnoi et al., 2020). Consumers will develop holistic impressions of the product based on other’s eWOM content, intensity, and valence. Accordingly, the diffusion rate depends on the social community’s perceptions of the innovations. These findings are evident in emerging markets where economic challenges increase the emphasis consumers put on eWOM when making decisions, as portrayed in this research. Accordingly, entrepreneurial firms must integrate eWOM in their marketing strategies to increase consumers’ confidence in their new product/services, yielding better adoption and diffusion rates. Further research is imperative to disseminate the implications of eWOM on other variables (such as brand image, price, and utility) that influence the diffusion rate of innovations.

5.2 Managerial implications

The findings of this study provide significant managerial implications for entrepreneurial firms to increase the diffusion rate of new products using eWOM:

1) The research framework emphasises the role of eWOM valency on the diffusion rate in emerging markets. Companies should carefully examine consumers’ perceptions towards innovations by analysing the content of eWOM. An entrepreneurial firm’s marketing strategy should incorporate positive testimonials into its marketing strategy due to its evident influence on consumers’ willingness to purchase. Authentic and genuine eWOM can be crucial for start-ups, given their limitations with brand equity and financial budgets. Further, precise attention should also be given to negative eWOM due to its effect on the perceived risk of adopting innovations. Marketers in entrepreneurial firms should address the concerns raised in negative eWOM and integrate such feedback as part of their customer relationship management strategy.

2) This research confirms the role of the content of eWOM on consumers’ perceived acceptance of innovations. In line with previous studies, the perceived usefulness of a new product/service is guided by the content of available eWOM (organic and amplified). Accordingly, to leverage consumers interest in innovations, entrepreneurial firms should integrate organic and amplified eWOM at different stages of the customer journey to provide the necessary reassurances about the adoption decision. A match should be made between the eWOM content (including photos and videos) and the new product to display its features in an exciting approach. eWOM is crucial at the pre-purchase stage since consumers tend to engage with eWOM to attain reassurances before purchase.

3) Entrepreneurial firms should invest in customer relationship management to maintain ongoing chats with consumers and increase the intensity of eWOM (Nguyen, 2019; Rimé, 2009; Nam et al., 2020). Integrating social media platforms and encouraging free trials stimulate intentions to write eWOM. For instance, firms should design a marketing strategy that creates a dialogue with the consumer and answers their queries. This strategy helps companies speed up entry into the market, leading to a faster diffusion rate. Therefore, entrepreneurial incubators and policymakers should invest in marketing communications to engage and maintain a conversation with consumers to harvest the fruits of their innovations.
6. Limitations and Future Work Recommendations

This research opened the scope for further research on the effect of eWOM on firms’ diffusion rate of innovation. The findings provide empirical support to the effect of eWOM dimensions on the diffusion of innovations. However, the results are based on start-up firms in the e-services industry that have been there for few years. The reputation and longevity of these innovations may have influenced the perceived role of eWOM dimensions on the rate of diffusion. Consequently, future work should focus on the effect of integrating eWOM in the development stage of new innovations, as to determine its likely influence on the diffusion of innovation. Examining lean start-ups could produce detailed insights for advancing new online services.

Likewise, there is a need for future research applying the current research framework into another context of entrepreneurial firms to ensure the generalizability of the results. The data focused on entrepreneurial firms in one emerging market (Jordan). Taking into consideration the cross-culture issues that influence customer experience (Verhoef et al., 2009), there is a need for a comparative research across other emerging countries to attain support to the findings demonstrated in this research. Specifically, it will be interesting to check how different societies perceive positive/negative eWOM. Additionally, this research examined the users of e-services innovation. Future research could take a Service-Dominant logic (SD-Logic) perspective to obtain further insights on the role of co-creation and digital community innovation and adoption.

References


