Entrepreneurs' Information Retrieval: The Role of Affective Aspects through the Media Richness Theory

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***Abstract*— A narrative review of the literature on the importance of affective factors in the information retrieval (IR) behaviours of entrepreneurs is presented in this paper. Through the lens of Media Richness Theory, we examine the importance of the richness of information and medium to the success of the IR process. The results show that IR system does not only serve entrepreneurs in regard to their information needs but also their emotional needs. The richness of the IR system, referring to the accessibility, is an essential factor for entrepreneurs' preference and use of the IR medium. This paper contributes to literature by showing how affective attributes are associated with other factors, in addition to their effect on the IR behaviours. The findings reveal that the affective characteristics are both an individual need and a determining component in the process.**

Keywords—affective factors, entrepreneurs, information retrieval, media richness theory (MRT)

I. Introduction

The mainstream research on entrepreneurship and information retrieval (IR) so far predominantly focuses on the creation and development of technical systems and interfaces, such as an efficient Web portal for entrepreneurs by analysing the search mechanism or interactive IR systems for entrepreneurs' e-commerce store [1-2]. While there is limited research addressing the entrepreneurs' IR process or activities, Lea et al. [3] highlighted a need for further analysis of the personalised IR system for entrepreneurs. Entrepreneurs, as users, too often have little say in the development of IR systems; at the same time, developers, who develop, design, and implement, have a limited view of how the systems they develop can be used. Moreover, IR literature also presents the importance of affective factors [4-6]. Affective factors are emotions and feelings which an information seeker experiences in the process of the information search and retrieval [7]. Such feelings include uncertainty, confusion, doubt, frustration, optimism, satisfaction, and confidence, among others. Scholars, however, have mostly paid attention to the role of cognitive factors but neglected affective determinants in developing the IR [8]. Using these as a starting point, the main objective of this paper is to examine the research on the relevance of IR in entrepreneurs' information needs while also presenting unique insights on the affective factor impacting entrepreneurs' IR behaviours in order to close the gap mentioned above. The main question guiding this research is: "*what is the role of IR in entrepreneurial performances and how do the affective factors influence entrepreneurs' IR?* To answer the research question, we reviewed a selected and relevant literature on this specific topic and examined the relevance of affective factors to IR behaviours through the lens of media richness theory (MRT). We employed this theory based on its argument that the ability of a medium to convey information richness ensuring the satisfaction of the information receiver, and task performance.

II. Methodology

Given the explicit focus of the study, we conduct a narrative review to analyse literature on the importance of IR for entrepreneurs and assessing the role of affective aspects in the entrepreneurs behaviours. This method allows us to provide an exploratory evaluation of a subset of literature in this particular phenomenon. Furthermore, we chose this approach to maintain the flexibility and research discretion to delve into the impact of affective attributes in entrepreneurs' IR especially through the lens of MRT. This narrative literature review will be consolidated into a lightweight theoretical framework which will support the forthcoming discussion on the research problem.

III. Entreneurs' Information Retrieval

Business information is defined as relevant information to operate a business. It helps business owners to know their environment or complete a specific task. Business information is a critical asset for entrepreneurial success [9]. Some authors stated that the acquisitions and effective use of information positively influence business strategies, operations, and performance evaluation [10-11]. Friedman [12] highlighted the role of information in enabling entrepreneurs to make rational decisions, while Popovič et al. [13] elaborated on its importance in managerial decisions and organisational improvements. Entrepreneurs need relevant, accurate and timely information to overcome pressure, make decision, adapt to market changes, as well as develop and manage their business strategy. With the most relevant, timely, and credible information, entrepreneurs gain ability to effectively process decisions for their business [11]. In the contemporary and information-based society, IR is growing to be the dominant form of information access [14-15]. People engage in IR every day, for instance, using a web search engine. Dinet [15] defined IR as an activity to find some desired information in a store of information or a database. However, the IR is a broad concept that is often used interchangeably with information seeking and information searching. According to Xie [16], IR mainly refers to information searching behaviours that involve interactions between the users and computer-based IR systems. There are many forms of IR systems, such as personal database on the computer, online databases, search engine, the history of web browser, cookies, bookmark. Dinet [15] extended the concept of IR to everything that falls under the search for documents or information regardless of the environments (physical, offline, digital environment, digital library, Internet). In the digital era, the concept of IR is important and relevant to everyday information behaviour. In the context of IR, systems search the database and provide results containing or matching with search words that a user enters into systems. The usage of an IR assists its users in reaching more information on a particular topic, browsing, or filtering, and extracting information from the query results.

The IR is an integral part of the operation process concerning the searching, finding representation, storage, and organisation of business information and knowledge [15, 17]. The development of the Internet and digital devices has brought changes to the existing online IR systems. Online searches are conducted in real-time, allowing users to search

and obtain results almost immediately. For entrepreneurs, the high-pressure business environments and scarce resources make the IR appealing to their operations since it supports businesses to maximise profits and minimise the risk [1, 15]. Entrepreneurs face many challenges due to a lack of resources in human, financial, and non-monetary capitals (experiences, know-how, internal databases, network). Entrepreneurs need to proactively respond to the changes and threats of the market environment while continuously learning and innovating to assure their position and growth. Quick and easy access to information is critical for entrepreneurs to identify trends, visualise bottlenecks, focus on the most pressing issues, and quickly obtain the insight they need to make business decisions. They also have many administrative tasks that require a constant updating of information, such as taxation, regulation, business registration procedures, especially for the newly established ones [10]. The automation of IR, thus, significantly reduces the amount of manual work and time spent on investigating databases. Through IR, entrepreneurs will be able to reach relevant and timely information to their needs [15, 18], and most of the IR systems provide technology designed to help reduce the noise and arrive at more precise results. They also include advanced searching capabilities allowing users to create sophisticated and complex queries. Therefore, IR is a solution for entrepreneurs to minimise the effects of time constraints, information overload, as well as geographical dispersion of information [15, 18].

IV. Affective Factors in Information Retrieval

A. *The concept of affective factors*

The affective factors broadly refer to affection, emotion, preference, and mood and investigated in many information behaviours studies [4-7, 19-20]. They can influence the preferences, selection, and intention towards different choices and actions during the information-seeking behaviours process [7,19]. Fiske and Taylor [21] linked these factors to direct experience, which influence the shape of individual perception and attitude towards a certain issue and potentially drives future actions [22]. These factors affect how a person acts upon positive and negative events and feels during the information-seeking process [7, 19] and are associated with the uncertainty in which users experienced overtime pressure [23]. This uncertainty is a combination of different negative emotions, such as irritation, frustration, anxiety, and rage. The high affective load can cause ineffective cognitive behaviour. Furthermore, affective factors were also discussed in the Flow Theory [24], which concerns the state of enjoyment in the users' mind and presents that the quality of prior experiences motivates people to re-engage in an activity. The flow of positive affective factors determines intention to adopt technology as the users perceive technology with usefulness and ease of use. Regarding the IR, earlier studies focused predominantly on systems and technologies, but a growing body of the literature indicates a shift in taking user-oriented approaches, such as sense-making, cognitive and behavioural approaches, to investigate the complex nature of IR [25-27]. Along with the cognitive and physical factors, affective factors can either support or hinder the interactions between users and IR systems. Apart from finding IR useful, IR users should also feel happy, which ensures their concentration and patience while implementing the search through the IR system [28-29]. Since the goal of an IR system is to satisfy users, it is essential to identify and afford the users' emotion need and information need. It has been demonstrated that the affective factors complement and support the positivity of cognitive factors in online searching [10].

An individual's affective state is likely to change during the use of IR services. Tenopir et al. [30] associated positive feelings with positive thoughts about results, and negative feelings with thoughts related to the system, search strategy, and task. Others argued that the effectiveness of the IR system and users' satisfaction is correlated, and users' satisfaction partly reflects the effectiveness of the IR system [25]. Meanwhile, the success of result retrieved from the system determine the feeling of users, either happy or disappointed with the system. This result-oriented relationship is further confirmed by Kuhlthau et al. [19] with an emphasis on the feeling of frustration due to the unease in accessing information through the IR system. Saracevic [20] pointed out that affective factors are the level of user's interaction with the system, including beliefs, motivation, feelings (frustration, rage, happiness, relaxing), desires (how much completeness they want the task to be), urgency and proposed that a study of the affective level is necessary to analyse users' intention, belief, and motivation towards adopting the IR system for their information needs. During IR interactions, the level of cognitive, affective, and situational aspects in the interactions can and often do change as the problem or question is redefined, and refocused. When assessing how the well-retrieved document meets the users' information need, the affective attribute covers the relationship of three factors: users' motivational aspects, emotional attributes (success, happiness, satisfaction), and users' perception of the results retrieved by the system.

B. *Affective factors in entrepreneurs' information retrieval*

Many studies have found the link between affective factors and the entrepreneurs' information behaviours, information seeking approach, information evaluation, and their decision-making process [5-6, 32-33]. Saracevic [20] emphasised that a study on the affective experiences is necessary to analyse users' intention, belief, and motivation towards adopting the IR system for their information needs. Often affective factors play a role as emotional need and influential factors, which influence entrepreneurs' IR behaviours. Regarding the emotional need, it has been argued [33-34] that entrepreneurs' IR is initiated from the need to solve their negative feelings caused by their lack of knowledge. Entrepreneurs' IR happens when they experience negative feelings of anxiety, doubting, confusion, pressure due to the lack of information [19, 33]. According to [33], fear is one of the motivational factors that push entrepreneurs to engage in information seeking activities. Entrepreneurs work in highly risky and competitive environment where information is critical for a venture's survival and growth [15]. Kuhlthau [19] indicated that a feeling of frustration is the point when information seekers realise the need for information, thus initiating the IR activities. Entrepreneurs face negative emotions, such as stress and fear when they do not have sufficient information to support their decision-making and problem-solving. Dollinger [34], stated that entrepreneurs have to deal with the feeling of uncertainty and risk because they lack information and knowledge about the environment.

In addition to the stimulus of emotional factors in entrepreneurs' IR, emotions like satisfaction can lead entrepreneurs to terminate the information searching process. Fiet et al. [35] argued that entrepreneurs tend to stop the IR when they believe the current search result is best, and no

better results can be achieved with further research. Welter [33] referred to positive feelings, such as trust, as an instrument for entrepreneurs to determine the social cost and risk when deciding on the use of an IR system to approach information for overcoming their uncertainty in the business environment. These emotions also affect the entrepreneurs' IR satisfaction and their intention to continue using the IR system for future search [36]. During the search process using the IR system, if entrepreneurs sense positive feelings, they often gain good experiences, relevant knowledge, thus encouraged to reuse the IR systems and even recommend it to the others. Entrepreneurs are active-engaged users of IR system as Jansen et al. [37] debated that search engine like Google is one of the most popular sources for entrepreneurs to obtain information. Although, we observed the relevance of affective factors and the growth of IR system integration in entrepreneurship, the research evolving this topic is rather scarce in this research domain. The affective factors, whether positive or negative emotions are the individual experiences throughout different stages of the IR process. It can be motivational factors, such as goals, motivations, intentions that the users hold for executing and completing a specific information-seeking task [19]. Often, interactions with IR are assumed to be rational, while affective factors are often considered to be lack of rationality. However, recent research has shown that the effect of affective factors influences psychologically the rationale of information seekers [7, 23]. Together with cognitive aspects, they generally influence the information seekers' choice of information sources, information medium, and users' responses to the IR systems [7, 20]. Entrepreneurs prefer information sources that they can trust to avoid potential costs and risks [33]. Investigation on the adoption of IR systems, e.g. e-governmental websites, also integrates trust to define the users' perception of usefulness, perception of ease of use, and favourable attitude with regards to usage of these information sources. To illustrate, Bennani and Oumlil [38], supported by Featherman and Pavlou [39], stated the lack of trust in the security and reliability of systems and legal frameworks hinder entrepreneurs to use the IR systems. Furthermore, Davis [40] also declared that affective aspects could be useful criteria for identifying the information need of entrepreneurs, thus facilitating their search for relevant information in the IR system. For instance, entrepreneurs who are looking for opportunities for launching their business will seek positive information, such as news and announcements, which strengthen their belief in the business. Meanwhile, those who experienced negative feelings, such as failure, tiredness, disappointment, and depression will seek similar information, which can sympathise with their experience, inspire, and motivate their work [40].

V. Assessing affective factors in entrepreneurs' IR through the lens of media richness theory

A. *The concept of Media Richness Theory*

Extended from information processing theory, Media Richness Theory (MRT) proposed by Daft and Lengel [41] has become popular along with the diffusion of electronic communication media. It provides a framework for describing a media's ability to reproduce and deliver information without loss or distortion. The MRT states that each media has the ability to transmit the needed information and the outcomes depending on the capabilities of the media channels to fulfil communication requirements. The MRT is rooted based on the two communication forces: uncertainty, and equivocality [41]. Uncertainty is the absence of information, and it happens when there is a shortage in the quantity of information. Equivocality refers to confusion or lack of understanding due to ambiguous and conflicting interpretations of media communication. The amount of information is crucial in resolving the receivers' uncertainty, whereas the media's ability of deliberation, clarification, and enactment helps to reduce ambiguity. The two main scales to the richness of media are rich medium and lean medium. Each media has its richness attributes, and these determine the media's effectiveness in conveying information. A rich medium has multiple means for communicating the message and a stronger capacity to express the ambiguity of the messages to the receivers. Whereas a lean medium has fewer means of communicating a message, thus the messages received are blunter and more direct with little nuance. Through the lean medium, receivers require a longer time to understand the message. A higher degree of richness is suitable for heavy and complex message media, while lean media is sufficient for delivering simple and easy information [41]. In the business context, MRT has been largely used to examine internal organisational communication, e.g. the choice of media for manager-subordinate communication [42] and to examine communication channels for external relationships, e.g. business to business networking [43] building customer-business relationships in e-commerce [44], and customers' information search on digital platforms [45]. Vickery et al. [43] considered the significance of media richness in the B2B relationship where the environment is highly networked interdependent, contextual, and complicated with full of risks, uncertainty, variability, and equivocality. As authors argued, there is a strong link between rich media and firms' relational performance, satisfaction, loyalty, commitment, due to the fluid flow of information and knowledge within the organisational network. Jansen et al. [37] connected the MRT to analyse entrepreneurs' use of e-governmental services for searching for legal information. The authors went beyond the MRT by replacing the general criterion of task equivocality with situational variables, e.g. urgency, trust, and complexity. They highlighted the consideration of media's characteristics in entrepreneurs' decisions on selecting the source and identified characteristics, such as time-consuming, price, mobility, comprehensiveness (the amount of available information), and relevance of information to entrepreneurs' needs.

B. *The effect of affective factors through the lens of MRT*

The MRT and consequently the richness of information is applicable to monitor the value of the IR systems to the users based on their user-friendly features. Information richness is characterised depending on how efficient information is communicated [41-42]. The value of IR systems lies in their ability to deliver rich information and these systems should be able to deliver information at a low cost physically and mentally. The IR systems must facilitate the processing of rich information rather than just a large amount of the data, thus reducing the equivocality and uncertainty of the information. The MRT demonstrates the "richness" of a medium based on the availability of (a) immediate feedback, (b) multiple cues, (c) language variety, and (d) personal focus [41]. These four indicate that the features of IR systems should be developed to enhance their accessibility characteristics. The accessibility of information source includes three aspects: (i) the users' effort and time efficiency (source availability, convenience, and comprehensiveness); (ii) psychological perspectives,

(easy to use, familiarity, understandability), and (iii) economic benefits, (free to access) [46]. Several scholars [e.g., 10, 31] examined the importance of these characteristics in adopting technology for seeking information and assessed these factors through the perceived ease of use (easy navigation, quick response, fitting interface, borderless access), and the perceived usefulness (information completeness, reducing financial cost, saving energy, saving time, and useful information). Woudstra [46] asserted the role of language for information seekers as it should be easy to read, use, and available in the users' language, thus, to afford the least metal effort requirement.

Based on this theory, we further consider the active role of the users in selecting and using the IR systems based on their perception of the value of the system. Researchers like Baharzadeh and Farhadpoor [4]; Kahai and Cooper [31], and Jansen et al. [37] posited a positive relationship between the perceived richness of information sources and the attitude to use them. Li and Chatterjee [47] stated that users who experience enjoyment develop a positive user experience and perceived information richness. Baharzadeh and Farhadpoor [4] noted that it is important for the IR systems to satisfy both the information and emotional needs of the users. In other words, these information systems should not only deliver useful information to the users but also, they should be capable of enhancing pleasant emotions, reducing negative feelings. This is mainly because once the affective factors are positive, the overall experience and performance will be improved. Additionally, the theory also suggests the connection between information richness and users' trust in the information source. Jansen et al. [37] argued that media richness has a strong relationship with intentions to trust the IR system, thus fosters the users' confidence in adopting and using this source.

VI. Future Research Agenda

This research reviewed the prior studies that had focused and explicitly investigated the impact of affective aspects in entrepreneurs' information behaviours. Our narrative review results show that this topic is fragmented, specifically in the field of entrepreneurship. Most of the prior studies relate the affective attributes for their influential factors, but there is a lack of research considering affective attributes as emotional needs arising along with information need. Therefore, it is essential for the researchers to investigate and examine the initiation of the IR activities and assess whether entrepreneurs retrieve information to solve their information need, or emotional need, or both, and identify which one has a greater impact on motivation.

The research following this path should aim at enhancing of understanding of entrepreneurs' motivation to perform IR, thus extend and enrich our perspectives and knowledge when studying IR. In the case of considering affective attribute as an emotional need that causes IR activities; it would be beneficial to see if this changes our current approach in the IR models and analysing the IR behaviours and process. In addition, another interesting topic would be a further analysis on the affective factors and the IR through the ties with different relevant theory, such as Flow Theory. The findings of this research also show that the MRT is rather a new concept in the IR study, therefore future research can develop in the direction which considers the richness of information and medium provided by the IR system. The results also show that the accessibility of the IR system and its relevance to the MRT could be studied further with empirical results. In addition to this, we found that entrepreneurs seem to be an unpopular research population in the IR and MRT literature. We contribute to the literature by showing that information and the IR are vital for the success and survival of entrepreneurs and their enterprises in the digital-based economy and information-based society. Entrepreneurs are important for economic and socio growth, but also a vulnerable group who face many challenges and risks in their career. Therefore, we would suggest that researchers pick this group as their research sample for their work to provide new knowledge on the nexus between entrepreneurs, entrepreneurship, information retrieval and media richness. The findings of this research also have some practical implications to policymakers, information providers, practitioners, educators, as they can update their knowledge and further develop and improve their services, regulations, systems that would fit entrepreneurs' needs and expectations. Finally, we found that the current IR systems have weaknesses in their ability to interact efficiently with the users due to the limitation in technology and economic development. From a system perspective, the IR requires several different clarifications to effectively find the matched information from the system for explicit emotions requested in information need criteria. In implicit scenarios, the situation is more difficult since the systems would have to predict the affective aspects emerging from the information need. This can hinder the user experience while retrieving information. To overcome the weakness, few IR systems have offered artificial intelligence to assist users' interactions with the system, e.g. robot chat. Future research should investigate the effectiveness of the technology, e.g. (i) to what extent the current IR system can understand and afford its users' emotions, and (ii) what are the users' actual expectations or requirements to suggest new directions for developing the system further.

VII. Conclussion

This paper aims to explore the importance of Information Retrieval in the entrepreneurial development and growth and examines the influence of affective factors in entrepreneurs' IR. WE theoretically contribute to the entrepreneurship and IR literature by showing how affective attributes interplay with other factors and influence the IR behaviours. The findings show that affective attributes play as an individual need which can motivate users to engage in the IR process. By revisiting the relevant concepts of the IR and affective factors, especially in the entrepreneurship domain, we provide new insights into the research topic at hand which can be used as a reference for future research in the field. We introduce and use the Media Richness Theory (MRT) in this research area, thus offering a novel angle to consider the emotion-based IR systems. We further draw on the literature to illustrate the influence of affective factors on the entrepreneurs' IR by offering three propositions to show the relationship between IR system, affective factors, IR behaviours and the entrepreneurial performance. First, we provide a narrative review of the literature highlighting the role of affective aspects in the entrepreneurs' IR and we found that the affective factors can partially manipulate the entrepreneurs towards the selection of information systems, and how they respond accordingly to the nature of the IR tasks and information itself. We find that the affective factors influence entrepreneurs' IR activities, from arousing their information need, pushing them to perform IR, encouraging them in selecting the information medium, and ending or continuing the searches [19]. Our results provide supports on the importance of affective factors in the success,

failure, ending, and continuation of the IR activities [19, 33-34, 37, 40]. For instance, if an entrepreneur is happy with the results, she/he will stop the IR activity since the outcomes have already made her/him feel satisfied with the answer to the information needs [35]. Moreover, we argue that the IR does not only serve entrepreneurs regarding their information needs but also their emotional needs [19, 28-29, 35]. Thus, we suggest the first proposition.

P1: "*The affective experiences with the IR systems will positively influence the process and results of entrepreneurs' IR behaviours*".

Through the lens of MRT, we find that the richness of the IR system, referring to the accessibility, is an essential factor for entrepreneurs to examine the value of an IR system, thus influencing the affective experiences, preference, and intention to use this information source [4, 31, 37 40]. The richness of information, which an IR system can offer, also strengthens the users' trust in the systems. This richness is perceived when the users are generally satisfied with the system [17], and positively influence the results of their activities. Thus, we suggest the second proposition.

P2: "*Successful implementation of IR systems will improve entrepreneurs' affective experiences, thus enhance their IR activities".*

We confirm that the IR is an important aspect of operation procedures including the representation, searching, finding, storage, and organisation of business information and knowledge [17]. The development of digital technologies and Internet has brought crucial changes to the existing IR systems, as entrepreneurs can conduct online searches in real-time and get results immediately, so significantly reducing the amount of manual work and time spent on investigating databases [15, 17-18]. The convenience brought by the IR systems helps entrepreneurs to improve their information search activities, consequently increasing the entrepreneurial performance and success. Thus, we suggest the third proposition.

P3: "*Entrepreneur' IR has a significant impact on their business's performance and growth".*

We suggest further research to examine the propositions provided in this paper, both conceptually and empirically. We suggest further conceptual research to review literature on the role of affective factors on the adoption and continual use of the IR systems. An extended review should also include the interplay between affective and cognitive factors that enhance the entrepreneurs' IR behaviours. Empirical research should focus on the entrepreneurs' use of IR systems and assess the degree to which the IR enhances the entrepreneurial performance and growth. Continued exploration of how to improve IR systems that sufficiently afford both information and emotional needs of entrepreneurs will deepen our knowledge of entrepreneurs' IR, and the appliance of IR systems in entrepreneurial success. Lastly, the approach and review method used in this research may hinder the comprehensiveness of the results and an alternative method such as systematic literature review may provide additional insights which were not found in the narrative review.

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