Seeking Shared Understanding: A Review and Lexical Analysis of the Digital Entrepreneurship

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ABSTRACT

Given the emerging prominence of digital influences across all industries, it seems likely entrepreneurial ventures that embrace digital technologies as core to their business will become even more ubiquitous in the future. However, the relatively nascent literature on digital entrepreneurship has become splintered as numerous areas are divergent in focus and lacking in shared understanding of core concepts. The need for improved understanding and more singular conceptualisations in digital entrepreneurship has served as the motivation for this study. Hence, this study aims to bring cohesion to the digital entrepreneurship literature through an automated content analysis that identifies common themes and concepts present in the literature. The automated content analysis was conducted using the machine-based lexical analysis tool, Leximancer. The data set used for this study is made up of digital entrepreneurship journal articles collected through the Scopus database. In total, a corpus of 576 highly ranked academic journal articles was assembled (A*, A, and B according to the ABDC ranking list, 2016). The insights from this study provide a strong basis for discussion, critique and guidance for future research. This study contributes to the literature by resolving conflicts and disagreements through machine-based lexical analysis of the digital entrepreneurship literature. Contributions include highlighting the importance of network effects and network structures for digital entrepreneurial success. The findings also have important implications for both digital entrepreneurs and researchers, as new areas of scholarly interest have been identified for future research.

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Attestation of Authorship

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or institution of higher learning, except where due acknowledgement is made in the acknowledgements."

Dylan Valensky

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1. Introduction

The fastest-growing businesses today are the result of entrepreneurs embracing digital technologies. Companies such as Amazon, AirBnB, Google, Facebook, Netflix, and Uber have cemented their place as giants in the corporate world despite starting as small digital startups. While the shift to digitalisation has occurred to varying degrees in business, digital technology has given rise to a novel form of entrepreneurship known as 'digital entrepreneurship.' Digital entrepreneurship can be defined as the practice of pursuing business opportunities which are made possible through the integration of digital technologies (Davidson & Vaast, 2010; Giones & Brem, 2017). While digital entrepreneurship shares similarities with traditional entrepreneurship concerning the pursuit of opportunities through the commercialisation of goods and services, it additionally incorporates digital elements that function as the cornerstone of business operations. In so doing, digital entrepreneurship has resulted in novel ways of doing business.

However, due to the relatively recent emergence of the digital entrepreneurship discipline, extant research has a splintered focus on many different dimensions of the digital entrepreneurship phenomenon. As a result, numerous areas of the literature are divergent in focus and lacking in shared understanding of core concepts. One example is the business model construct. Business models have become a prominent area of interest for researchers, and while there is agreement effective business models are integral to the success of digital entrepreneurial ventures, the definition of a business model and its components remain contested. Many different definitions have been proposed (e.g., Bucherer et al., 2012; Osterwalder et al., 2005; Teece, 2010), hence, scholars are far from an agreed definition. Furthermore, although digital platform business models have received

substantial scholarly attention (e.g., Nambisan & Baron 2019; Song, 2019), disagreement remains concerning strategies to be used by platforms to achieve success. Similarly, in terms of startup development, scholars find little agreement on the most successful approaches to adopt. While agile development such as lean approaches have received much attention in the digital entrepreneurship literature (e.g., Blank, 2020; Ghezzi & Cavallo 2018; Ries, 2011), questions remain as to whether a lean approach is suitable for all startups or not.

In summary, numerous areas of scholarly disagreement feature in the nascent digital entrepreneurship literature. Hence, it is an appropriate time to take stock of the digital entrepreneurship literature and attempt to uncover some consensus in areas that are of consequence to the digital entrepreneurship discipline. In response, the purpose of this study is to identify the common themes present in the digital entrepreneurship literature, to develop more singular conceptualisations and understandings. Hence, this study poses the following research question: 1) *"What are the common concepts, themes, and understandings that underpin the Digital Entrepreneurship literature?"*

To address the research question, the software program Leximancer is employed to undertake an automated content analysis of the digital entrepreneurship corpus. As an analytical tool, Leximancer enables the analysis of textual data and the uncovering of underlying concepts and terms within the corpus. To do so, Leximancer provides a concept map which displays the prominent themes and concepts emerging from the textual data, together with other tools such as the thesaurus to further strengthen the analysis.

The digital entrepreneurship corpus studied herein was sourced from the Scopus database. In terms of quality, only highly ranked (A*, A and B) journal articles were sourced (according to the ABDC ranking list, 2016). These journal

articles were further filtered by the discipline focus of the journal, by drawing on business, management and accounting-related journals only.

By addressing the proposed research question, this dissertation aims to bring cohesion to the digital entrepreneurship literature and makes the following contributions. First, it sorts and identifies conflict, disagreement, and gaps in the literature through a literature review. For example, conflict pertaining to concept definitions and development approaches are identified. Inconsistent definitions are generally attributed to the different settings in which the concepts have been studied whereas conflict relating to development approaches is because of the varying degrees of technological levels of digital startups. Secondly, the study discovers the general concepts and themes that underpin the literature, such as business models and networks. These concepts were found to be integral to digital entrepreneurship success. For instance, there is a strong reliance on network structures by digital ventures compared to offline physical ventures.

The remainder of this dissertation is organised as follows. In Chapter 2, the literature on digital entrepreneurship is reviewed. Although the dissertation itself features an automated content analysis of the digital entrepreneurship corpus, the purpose of this initial literature review is to highlight the different viewpoints and splintered understandings that exist within the literature. In Chapter 3, the methodology of the dissertation is described, which include the data collection process, and further details about content analysis undertaken using the Leximancer method. Chapter 4 presents the analysis and findings, and Chapter 5 offers a discussion and some concluding remarks, including the theoretical contribution and practical implications of the dissertation. Included in Chapter 5 are also some suggestions for further research and a description of the limitations of the dissertation.

2. Literature Review

Entrepreneurship literature has adopted the three levels of analytical focus: micro-, meso-, and macro-levels (Davidsson & Wiklund, 2001). These respective levels could be thought of as representing different layers where the micro-level is the innermost focus centring on the entrepreneur, the meso-level is the bridge between the inner and outer focus, which is concerned with organisational elements, and the macro-level is the outer focus concerned with the elements of the external environment. Thus, the micro-level features entrepreneurial competencies and traits (Robles & Zárraga-Rodríguez, 2015) while the meso-level includes start-ups, and business models (Kim et al., 2016). Last, the macro-level includes networks and ecosystems (Valdez & Richardson, 2013). Numerous studies have focused on the micro-level of entrepreneurship such as the role of behavioural and cognitive characteristics of the founders in identifying entrepreneurial opportunities and creating new ventures (e.g., Baron, 2007; Brinckmann & Hoegl, 2011; Cassar & Friedman, 2009; Dyer et al., 2008; Gartner, 1988; Mitchell et al., 2007; Sleptsov & Anand, 2008).

However, limited attention has been paid to the meso-level and macro-level respectively. With the emergence of digital entrepreneurship, the importance and significance of these levels are becoming more recognised and accepted in the field of entrepreneurship research as encompassing areas have been found to play a profound role. Thus, the meso-level and macro-level will be the focus of this digital entrepreneurship literature review. Moreover, as this dissertation deliberately aims to focus on the divergent conceptualisations present in the digital entrepreneurship literature, this literature review aims to identify these areas of disagreement which exist in the literature as they pertain to these respective levels.

The literature review is structured as follows. First, a brief overview is provided of research streams in entrepreneurship and digital entrepreneurship, respectively. Then the dissertation delves into the meso-level and macro-level of digital entrepreneurship within which prominent research topics are reviewed.

2.1.Entrepreneurship

Entrepreneurship is a term that is difficult to define despite being investigated by many scholars from various standpoints and emphases (Dutot, 2015; Hull et al., 2007). By extension, entrepreneurship definitions consist of different aspects, such as venture creation and innovation (Gartner, 1988), opportunity exploitation (Kaish & Gilad, 1991), and taking on risks (Stevenson & Jarillo, 1990). Some of the earlier definitions of entrepreneurship focus on innovation with entrepreneurship defined as innovation with the goal of creating value to generate profit (Drucker, 1985; Gartner, 1988; Hornaday, 1992). Other scholars (Kaish & Gilad, 1991; Shane & Venkataraman, 2000) define entrepreneurship as a discovery process which leads to the process of acting on an opportunity to create goods and services. In contrast, later definitions of entrepreneurship adopt a more individualistic focus by defining entrepreneurship as an activity undertaken by individuals who discover, evaluate, and exploit opportunities with the goal of creating wealth (Davidsson, 2005; Hitt et al., 2011; Nasution et al., 2011).

Nonetheless, profit-seeking and innovation are two common features of entrepreneurship definitions. Profit-seeking is a driving force of entrepreneurship which enables new employment opportunities and income growth (Hisrich et al., 2005; Manish & Sutter, 2016). Schumpeter (1934) made innovation the cornerstone of entrepreneurial actions, stating “the entrepreneur’s function is to combine the productive factors, to bring them together” (Schumpeter 1934, p.76). Innovation

describes the actions taken with the goal of gaining a competitive advantage (Eisenhardt et al., 2000; Schaltegger et al., 2016).

The acts of finding and exploiting opportunities are also common features of entrepreneurship definitions. While there is agreement on the significance of the concept of opportunity in entrepreneurship, the nature and the process through which opportunities are found provide different perspectives. The 'discovery' and 'creation' perspectives have been the dominant views regarding opportunities in entrepreneurship. From the discovery view, an opportunity is thought to be independent of the entrepreneur (Shane & Venkataraman, 2000). In contrast, the creation view states opportunities are created through interactions (Dimov, 2007). While these perspectives offer contrasting views, Alvarez and Barney (2007) argue that these perspectives are not competing but simply offer different ways to find opportunities.

Different approaches have been developed to help entrepreneurs. As Frederiksen and Brem (2016) point out, some of the more prominent ones in the entrepreneurship literature consist of Customer Development (Blank 2003), Lean Startup (Ries 2011), Design Thinking (Brown 2009), the Business Model Canvas (Osterwalder & Pigneur, 2010) and Lean Canvas (Maurya 2012), the Entrepreneurial Operating System (Wickman 2011), The $100 Startup (Guillebeau 2012), Value Proposition Design (Osterwalder et al., 2014), and Agile Development (Shore & Warden 2008). In summary, these approaches have shaped the entrepreneurship literature. This has subsequently led to some of these approaches being applied in a digital entrepreneurial context as well.

2.2.Digital Entrepreneurship

Emerging from within the domain of entrepreneurship studies generally (Hull et al., 2007), the focus of this dissertation is digital entrepreneurship, which is a relatively

new area of research. Due to digital entrepreneurship's novelty, there is a lack of agreement and cohesion in the digital entrepreneurship literature. However, before addressing these discrepancies, a broad overview of digital entrepreneurship is required.

Digital entrepreneurship can generally be defined as the creation of new digital ventures or the execution of digital entrepreneurial activity (Davidson & Vaast, 2010). However, more specifically, digital entrepreneurship refers to ventures that provide products or services which are digital but may also have physical components (Hull et al., 2007). Despite its significance, research has typically undervalued the significance of digital technologies in entrepreneurial pursuits (Nambisan, 2017). According to Hull (2007), digital entrepreneurship consists of three types: 1) mild digital entrepreneurship, 2) moderate digital entrepreneurship, and 3) extreme digital entrepreneurship. Mild digital entrepreneurship consists of adopting digital practices to supplement a business while moderate digital entrepreneurship places greater emphasis on digital products and digital delivery. The existence of moderate digital entrepreneurship is dependent on digital infrastructure. Last, extreme digital entrepreneurship means the entire business is digital including production, goods and services, and the ways in which customers are reached (Hull et al., 2007).

In keeping with the focus of this dissertation on meso- and macro-level phenomena, these levels – and the constituent concepts that reside at these levels – will be discussed next.

2.3. The meso-level

The meso-level encompasses the internal elements of an organisation. This includes phenomena like business models, innovation approaches, and strategies employed by an organisation, all of which will be discussed next.

2.3.1. Digital Startups

There is disagreement on approaches that startups should adopt. See Table 1 below. A digital startup is a new business in its early stages of development and growth (Klotz et al., 2013) in which digital technologies form different components of a business model in a way that is important to the business. For example, in a business model framework comprising four components, digital technology will be at the centre of a digital startup's business model through product or service, value network, value delivery, and revenue model (Ojala, 2016). For example, Spotify is one such business in which digital technologies are at the centre of the business model. This reliance on digital technologies means digital startups can experience rapid growth as they do not share the same physical limitations as traditional startups. For instance, an affordance such as being accessible to customers around the globe means startups can experience rapid growth with little to none of the barriers faced traditional startup. As a result, there has been an increase in studies focusing on digital startup approaches.

One such approach is agile development. The term agile refers to the ability to react and adapt accordingly to changes (Qumer & Henderson-Sellers, 2008). For example, this entails applying acquired knowledge from prior experiences while learning from current experience to produce high-quality products in dynamic and evolving environments (Jyothi & Rao, 2012). However, there is disagreement around its suitability for all digital startups. For example, prominent forms of agile development in the digital entrepreneurship literature are Lean Startup Approaches. A lean startup approach typically entails the creation of a minimum viable product (MVP) and a focus on customer development (Ghezzi & Cavallo, 2018). An MVP is a version of a new product which enables information to be collected from customers

with the least effort (Ries, 2011). The MVP will then be modified and altered based on the collected information. Some scholars (e.g., Blank, 2020; Ghezzi & Cavallo 2018; Ries, 2011) have that argued lean startup approaches are important to the success of digital startups. Ghezzi & Cavallo (2018) argue digital entrepreneurs who adopt a Lean Startup Approach experience significant benefits from its implementation such as reducing time and costs to test the market, aligning business and customer needs, financial support, and verifying business model parameters. For example, implementation of Lean Startup Approaches allows for business model innovation (Ghezzi & Cavallo, 2018) increasing the likelihood of success. Digital startups need to be agile, so they can act according to the dynamics of the environments in which they operate (Mukti et al., 2019).

In contrast, other scholars have highlighted possible limitations of agile development. These consist of implementation difficulties, sometimes ambiguous benefits, and the lack of ownership or accountability (Drury et al., 2012; Janes & Succi, 2012). More recently, Shepherd and Gruber (2020) have highlighted gaps in the implementation of Lean Startup Approaches. For example, benefits may depend on the degree of technological development required for a product or service. A higher degree of technological requirements means that more resources and financial investments may be required to produce an MVP. This goes against the principles of Lean Startup Approaches. Furthermore, the conditions in which Lean Startup Approaches may be beneficial are also not known. This has been noted by contributors to lean startup approaches. For instance, Blank (2018) suggests that funding may lower the need to adopt a lean approach. With startups having access to large financial capital, it will be more logical to quickly develop a product or service and make mistakes than it will be to go through the iterative and longer process of lean approaches.

While agile development has often been touted as an important part of digital entrepreneurial success, questions are being asked about its applicability and suitability in different settings. In addition to this, limitations may also be present under certain circumstances. Similar to digital startup approaches, business models have also received increased attention due to its significance.

Table 1 - Digital Startups

Approach	Understanding
Agile Development	Digital startups need to be agile, so they can act according to the dynamics of the environments in which they operate (Mukti et al., 2019). Lean startup approaches are important to the success of digital startups (Blank, 2020; Ghezzi & Cavallo 2018; Ries, 2011).
Agile Development Limitations	Ambiguous benefits, and the lack of ownership or accountability (Drury et al., 2012; Janes & Succi, 2012). Benefits of lean startups may not be experienced by startups which products or services consist of higher of technological requirement.
Agile Development & Funding	Access to large financial capital means it will be more logical to quickly develop a product or service and make mistakes than it will be to go through the iterative and longer process of lean approaches (Blank 2018).

2.3.2. Business Models

Discussions of business models are prominent in the digital entrepreneurship literature (Kraus et al., 2018). However, despite receiving much attention, there is both a lack of cohesion and agreement in the literature (Andersén et al., 2015; Zott et al., 2011). See Table 2 below. In short, this could be attributed to the different settings in which business models have been studied. For example, some of these settings include information systems (Hedman & Kalling, 2003), business logic (Osterwalder et al., 2005), collaborative transactions (Andersson et al., 2006), and

design science (Beynon-Davies, 2018). Hence, heterogeneous settings ultimately contribute to the lack of agreement.

Firstly, there is disagreement surrounding the definition of business models and their components. Numerous definitions have been proposed (Bucherer et al., 2012; Osterwalder et al., 2005; Teece, 2010) however the term remains contested. For example, Osterwalder et al. (2005, p. 10), define a business model as a "description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, to generate profitable and sustainable revenue streams". Teece (2010) defines business models as a representation of a business' essential value creation and capture activities. Bucherer et al. (2012, p. 184) state the "business model abstracts the complexity of a company by reducing it to its core elements and their interrelations and therefore specifies the core business logic of the firm." Hence, obvious discrepancies are emerging between the proposed definitions with different elements being the focus of each definition.

Secondly, disagreement also extends to the relationship between business models and business strategy. For example, Pateli and Giaglis (2004) emphasise that clarification is needed on the relevance between business models and business strategy. Some scholars argue that these terms are synonymous and refer to the same thing. For instance, Kallio et al. (2006) consider the components of business models to be business strategies. Furthermore, Lange et al. (2007) argue that business models are just strategic activities to satisfy investors and promoters. However other researchers argue that even though the concepts may be intertwined, each concept has different purposes as they reveal different information. For instance, Magretta (2002) argues that the business strategy details how firms plan to gain a competitive advantage whereas the business model details the overall operation. Therefore, the

business model essentially links business strategies to business processes (Osterwalder, 2004) but is distinguishable as it includes both internal and external elements (Zott et al., 2011). Thus, the relationship between business models and business strategies is contested.

However, despite these disagreements, there is agreement that the business model is a process through which an organisation delivers its value proposition (Kulins et al., 2016; Osterwalder et al., 2005; Teece, 2010; Zott et al., 2011). A value proposition is defined as "what the firm will deliver to its customers, why they will be willing to pay for it, and the firm's primary approach to competitive advantage" (Boojihawon & Ngoasong, 2018, p.130). Osterwalder and Pigneur (2010) define a value proposition as the combination of products and services that create value for customers. Furthermore, entrepreneurs describe their business models in terms of the value proposition (Boojihawon & Ngoasong, 2018). Hence, it is evident that common themes emerge when business models are considered a process in which value propositions are set.

The value proposition concept is especially prevalent in digital business models. There is an agreement that a distinction exists between digital business models and traditional business models due to the adoption of digital technologies. For instance, digital business models offer more flexibility in terms of making changes to the business model. As a result, some digital business models like those which are categorised as moderate digital entrepreneurship or extreme digital entrepreneurship (Hull et al., 2007) have more freedom to make necessary changes and improve their value proposition through constant feedback from customers as a result of digital technologies (Ghezzi, 2019). For example, considering that the business logic is digitalised, this enables digital entrepreneurs to take advantage of interaction with customers. Hence, Osterwalder et al. (2014) argue businesses should

be customer-focused to maximise business model potential. The general view is that the needs of customers need to be met by the business model which is only possible through constant interactions with customers (Kuester, 2018). Thus, it is apparent value propositions are considered important in business models.

In summary, there is a lack of cohesion due to the contrasting settings or contexts in which digital business models have been studied. For instance, Dutot and Van Horne (2015) studied digital business models with a focus on the nature of goods and services, and all business operations being digitised. Ojala (2016) studied digital business models in the gaming industry. Boojihawon and Ngoasong (2018) dealt with digital business models in emerging economies. Standing and Mattsson (2016) researched ways in which opportunities are turned into business models. Gupta and Bose (2019) focused on the business model transformative process of pioneering businesses. While these are only some of the studies, it is evident the contrasting settings in which digital business models have been studied have subsequently led to the splintered nature of the literature. Despite this, one type of digital business model has been studied more thoroughly than others – platform business models – which have arisen from the prominence of digitalisation and the internet.

Table 2 - Business Models

Business Models	Understanding
Definition	"Description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, to generate profitable and sustainable revenue streams" (Osterwalder et al., 2005, p. 10). Representation of a business' essential value creation and capture activities (Teece, 2010). "Business model abstracts the complexity of a company by reducing it to its core elements and their interrelations and thus specifies the core business logic of the firm" (Bucherer et al., 2012, p. 184).
Business Model and Business Strategy	Business model components represent the business strategies (Kallio et al., 2006, Lange et al., 2007). Strategy details how firms plan to gain a competitive advantage whereas the business model details the overall operation (Magretta, 2002). Business model links business strategies to business processes (Osterwalder, 2004). Business model is different as it includes both internal and external elements (Zott et al., 2011).
Value Proposition	Business model is process through which value proposition is delivered (Kulins et al., 2016; Osterwalder et al., 2005; Teece, 2010; Zott et al., 2011).
Digital Flexibility	Digital business models have more freedom to make necessary changes and improve their value proposition through constant feedback from customers as a result of digital technologies (Ghezzi, 2019).

2.3.3. Platform Business Models

Conflicting views and disagreements exist pertaining to various aspects of the platform business model, despite its prominence and significance (Armstrong, 2006). See Table 3 below. Platforms operate in a digital space, such as businesses like Facebook, Airbnb and Uber. In general terms, this type of business model 1) enables two or more actor groups to find each other, and 2) facilitates the subsequent

interactions (Song, 2019). However, there is disagreement about the definition of a platform business model. As with the general business model discussion, platform business models are studied in different settings; hence, definitions are based on different theoretical lenses. For instance, some of the earlier definitions differ between two-sided platforms, where only two actors interact (like Uber or Airbnb), and multisided platforms (Armstrong, 2006) such as Google. Newer definitions have platform-based markets (Zhu & Iansiti, 2011) and platform ecosystems (Fu et al., 2017) being used interchangeably with platform business models. There is an agreement that "network effects" are in some capacity part of the definition (Hagiu & Wright, 2015). Network effects refer to the phenomenon whereby an increasing number of users on platform attract more producers, which subsequently attracts more users therefore increasing the value of the platform (Parker & Van Alstyne, 2005). So, while platform business models are prominent, conflict and disagreement exist in key aspects.

Conflicting views also exist in relation to how platforms become successful. Some scholars (e.g., Nambisan & Baron 2019; Song, 2019) argue that a platform's capability to attract users determines its long-term survival and success. They argue the goal of platform businesses should be the accumulation of users, as users are important for generating quality matches and creating value. In doing so, the accumulation of users will drive growth as more users are attracted and the platform value is increased (Song, 2019). Therefore, platform growth and success depend only on the ability to attract users. Once growth is achieved, network effects can be leveraged, as an increase in the number of users on the platform attracts more users, and so on (Mancha et al., 2018). User-driven growth is vital for platform survival and profitability (Song, 2019). Thus, attracting to users is considered paramount for platform businesses.

In contrast to this view, others (e.g., Srnicek, 2017; Zuboff, 2016) have argued data in addition to users is also a central resource for platform business model dominance and success. They argue that through data extraction, platforms can not only solidify their position in the market but also gain dominance and eliminate potential competitors. While there is support for the notion that more users using a platform makes it more valuable, it is argued data access means platforms can dominate their market with their position becoming unassailable to competitors (Srnicek, 2017). For example, the dynamic nature of markets means there is constant change taking place, therefore frequent updates to the platform are required as competitors update their applications and users' requirements evolve. Thus, platforms need to be updated in accordance with market forces (Hevner & Malgonde, 2019). Identifying these market forces comes down to data (Srnicek, 2017). Hence, data is considered more vital to the success of a platform.

Other scholars argue that open innovation can increase the value of a platform and gain a competitive advantage (Eckhardt et al., 2018; Harryson, 2008). Open innovation is an approach consisting of using the technology of other market players for commercial purposes as well as sharing one's own technology with partners in different markets to gain a competitive advantage (Harryson, 2008). Open-innovation strategies employed by platforms are often used to enhance the value of platform technologies (Eckhardt et al., 2018). Thus, platforms can adopt open innovation strategies to become platform leaders or enhance and solidify top position.

Hence, it is evident that conflicting views are present in the literature in relation to platform business models, including the ways platforms gain a competitive advantage and become successful. These include network effects, data

extraction, open innovation approaches. The need to gain an advantage over competitors has made innovation a big focus for startups, discussed next.

Table 3 - Platform Business Models

Platform Business Models	Understanding
Definition	Two sided or multisided platforms (Armstrong, 2006) Platform-based markets (Zhu & Iansiti, 2012) and platform ecosystems (Fu et al., 2017) used interchangeably with platform business models. Agreement that "network effects" are in some capacity part of the definition (Hagiu & Wright, 2015).
Platform Success	Attract users determines long-term survival and success (Nambisan & Baron 2019; Song, 2019). Data in addition to users is also a central resource for platform business model dominance and success (Srnicek, 2017; Zuboff, 2016). Open innovation can increase the value of a platform and gain a competitive advantage (Eckhardt et al., 2018; Harryson, 2008).

2.3.4. Digital Innovation

There is conflict pertaining to the type of innovation that digital entrepreneurs should adopt. See Table 4 below. Innovation is defined as a specific entrepreneurial tool which enables opportunities for new goods or new services (Drucker, 1985). Digital innovation has been defined as using both digital and non-digital elements to produce new products and services through a combination of digital data from different sources (Barrett et al., 2015). Innovation occurs when new combinations of resources and productive forces are implemented through the process of

‘combinatorial evolution’ (Arthur, 2009). Implementation of innovation must be carried out by entrepreneurs as it does not occur automatically. It is an action that gives resources new possibilities to create wealth. However new products and services are not the only outcomes of innovation.

Product innovation has traditionally been seen as an effective way of gaining competitive advantage (Teece, 2010). Specifically, product innovation refers to the development and release of goods or services as dictated by the needs of customers and market demands (Lee & Yoo, 2019). However, it is argued such a perspective no longer offers an adequate competitive edge (McGrath, 2011). That is because innovation does not always result in business success as products and services can be copied. Additionally, the cost of creating, developing, and shipping new goods have risen (Chesbrough, 2007). So, while traditional innovation has focused on product or services, other scholars have argued the focus should be on business model innovation (Chesbrough, 2007). For example, Standing and Mattsson (2016) suggest that business model innovation offer more benefits. Thus, there is conflict pertaining to the type of innovation to adopt.

Furthermore, conflict extends to how innovation should be carried out. One such idea which is prominent in the literature is co-creation (Prahalad & Ramaswamy, 2004). Co-creation is defined as “the integration of resources, provided by many sources, including a full range of market-facing, private and public actors” to produce value (Vargo & Lusch 2016, p.5). Scholars argue digital entrepreneurs should leverage other actors as co-creators of value by designing products in ways that allow users to redesign and share. Digital technologies have enabled different ways of pursuing entrepreneurship where opportunities are recognised and exploited through co-creation among diverse actors. Limited resources and knowledge mean digital entrepreneurs will utilise external resources to spark digital innovations

(Selander et al., 2010). Therefore, digital innovation typically involves multiple actors interacting with each other. Thus, ecosystems which contain various resources and information play an important part in digital innovation. However, the out-in-the-open nature of co-creation violates the importance of secrecy, which some argue is important. For instance, Arvidsson and Mønsted (2017) argue one challenge digital entrepreneurs must overcome to generate innovation potential is concealment. This is because entrepreneurs pursue opportunities that are not known to others. Therefore, entrepreneurs are exposed to risks associated with their ideas being copied. For instance, some actors use these settings just to find new ideas or acquire knowledge instead of focusing on collaboration (Veer et al., 2016). This puts entrepreneurs at risk of being imitated.

Thus, innovation approaches remain contested between involving multiple actors through co-creation and ensuring that innovation potential is being concealed until it can be protected. More attention has turned to the innovation of business models as an alternate way to achieving exclusive market success (Kim & Mauborgne 1999), discussed next.

Table 4 – Approaches to Innovation

Type of Innovation	Understanding
Product Innovation	No longer offers an adequate competitive edge as products and services can be copied. (McGrath, 2011). Cost of creating, developing, and shipping new goods have risen therefore the focus should be on business models (Chesbrough, 2007).
Innovation Approaches	Limited resources and knowledge mean digital entrepreneurs will utilise external resources to spark digital innovations (Selander et al., 2010). Digital entrepreneurs must be able to conceal innovation to generate innovation potential. (Arvidsson &Mønsted, 2017). Some actors use these external settings for the sole purpose of acquiring new ideas or knowledge instead of focusing on collaboration (Veer et al., 2016), which could result in ideas being imitated.

2.3.5. Business model innovation

Business model innovation is another contentious topic in the literature. See Table 5 below. Like the business model construct, there is a lack of a widely accepted definition for business model innovation (Spieth et al., 2014). Furthermore, there is no understanding of what exactly constitutes business model innovation (Taran et al., 2015), how to achieve business model innovation (Osterwalder & Pigneur, 2010), and what leads to business model innovation (Shepherd & Gruber, 2020) – despite business model innovation making up a significant part of the literature. Business model innovation is defined as making changes to the business model, which improves the business and potentially results in competitive advantage (Teece,

2010). Business model innovation usually occurs over time, especially when firms are growing and experiencing success (Landonia et al., 2019).

Greater emphasis has been placed on business models and ways in which business model innovation can provide an edge. Research suggests business model innovation has a greater impact than product or service innovation (Standing & Mattsson, 2016). It is argued that business model innovation can provide better market success by virtue of being unique (Kim & Mauborgne, 1999). For example, it is more challenging for others to replicate business model innovation as the innovation itself is usually based on unique factors such as resources and skills (Liu & Bell, 2019). Hence, technology enables value creation activities to be aligned in new ways; therefore, business model innovation might be a preferred means to build sustainable competitive advantage (McGrath, 2011; Teece, 2010; Zott et al., 2011). The more a start-up develops a business model based on competitive advantages, core skills, and unique resources, the more difficult it is for competitors to copy (Liu & Bell, 2019). Despite this, other scholars have argued neither business model innovation nor product innovation should be neglected as they are complements (Landonia et al., 2019), and thus both approaches should receive attention. For instance, Teece (2010) argues that entrepreneurs need to work on both product innovation and business model design for innovation to be profitable.

However, in contrast to the view that entrepreneurs should focus on both product and business model innovation, Comes and Berniker (2008) argue that because business model innovation is considered to be different to product or process innovation, it offers exclusive and unique ways for firms to gain a competitive advantage. Despite many scholars (e.g., Amit & Zott, 2001; Chesbrough, 2010; Landonia et al., 2019; McGrath, 2011; Teece, 2010) echoing the importance of business model innovation, noticeable gaps in the literature appear. How to achieve

business model innovation is not conceptualised (Osterwalder & Pigneur, 2010). For example, the activities or processes entrepreneurs use to achieve business model innovation are not known. Furthermore, the process which leads to business model innovation and the outcomes thereof are also not known (Shepherd & Gruber, 2020).

Considering all the above, the literature on the meso-level, which consists of an organisation's internal elements such as startup approaches, business models, and innovation, remains contested. The macro level, which is discussed next, follows a similar pattern.

Table 5 - Business Model Innovation

Business Model Innovation	Understanding
Business Model Innovation	Business model innovation offers more benefits (Standing & Mattsson, 2016). Business model innovation can provide better market success by virtue of being unique (Kim & Mauborgne, 1999). More challenging for others to replicate business model innovation as the innovation itself is usually based on unique factors such as resources and skills (Liu & Bell, 2019).
Business Model and Product Innovation	Entrepreneurs need to work on both product innovation and business model design for innovation to be profitable (Teece, 2010). Business model innovation and product innovation are complements, not substitutes (Landonia et el., 2019).
Gaps	How to achieve business model innovation is not conceptualised (Osterwalder & Pigneur, 2010). Process which leads to business model innovation and the outcomes thereof are also not known (Shepherd & Gruber, 2020).

2.4. The macro-level

The macro-level adopts a broader view compared to the meso-level; therefore, it consists of elements in the external environment. This includes phenomena like information sources, networks, and ecosystems, all of which will be discussed next.

2.4.1. Information

While information is considered the foundation of digital entrepreneurial endeavours in the literature, disagreement exists with regards to the accessibility and availability of key information (see Table 6 below). Digital technologies have given rise to new sources of information such as big data analytics, machine learning, cloud computing, the Internet of Things (IoT), and platforms such as social media (Tekic & Koroteev, 2019). For instance, by analysing big data, future trends and customers' preferences can be determined. Other non-digital sources of information are Venture Capitalists (VCs). VCs have positive impacts on startups as they assist in reducing problems linked to asymmetric information. VCs are investors providing critical resources for a startup's survival, such as capital, information and knowledge (Cavallo et al., 2019).

However, with VCs possessing such key information, other scholars have presented contrasting views to the information accessibility. They argue that despite the wide range of information sources enabled by digital technologies, there are issues pertaining to information overload and access to key information. For instance, Dy (2019, p. 5) argues that "there is a proliferation of information of all types, and a number of novel challenges for people navigating this information overload". Furthermore, it is argued that key information crucial to the success aspects of digital entrepreneurship is still hidden and only available to those with connections to the social elite and exclusive networks (Dy, 2019) such as VCs. Other scholars such as Hole (2019) argue that platforms such as Amazon and Facebook

possess information that is vital but inaccessible to entrepreneurs thus contributing to information asymmetry.

Information is important for entrepreneurs as it serves as the basis for making informed decisions at different stages of the entrepreneurial process. For instance, information can assist entrepreneurs in recognising and exploiting opportunities. A variety of sources is utilised by entrepreneurs to find valuable information. Furthermore, VCs can provide beneficial resources such as information. However, it argued that information is accessible only to entrepreneurs with access to networks, thus there are issues pertaining to accessibility.

Table 6 - Information

Information	Understanding
Sources	Digital technologies have given rise to new sources of information (Tekic & Koroteev, 2019). VCs are sources of information (Cavallo et al., 2019).
Asymmetry	Key information crucial to the success aspects of digital entrepreneurship is still hidden and only available to those with connections to the social elite and exclusive networks (Dy, 2019). There is an information asymmetry between platforms and users (Hole, 2019).

2.4.2. Entrepreneurial Networks

There is disagreement about the role of social networks in digital entrepreneurship. See Table 7 below. Social networks have been defined as "a collection of individuals who may or may not to be known to each other and who, in some way contribute something to the entrepreneur, either passively, reactively or proactively whether

specifically elicited or not." (Gilmore & Carson 1999, p. 31). The social network perspective has formed the dominant theoretical view of entrepreneurial networks which focuses on the impact of an individual's network ties. Entrepreneurs are more likely to be dependent on social networks as evidence suggests that entrepreneurs build networks through different social aspects (Anderson et al., 2010). Having access to social networks facilitates startup development (Davidsson & Honig, 2003), especially informal ties such as family, friends, and associates (Jack et al., 2010). This is expected as the network requirements of the entrepreneur and the startup are likely to coincide, which consists of social and economic needs and objectives (Jack et al., 2010). Thus, social networks are important to digital entrepreneurs.

Social networks have been heralded as an important part of opportunity development and success in entrepreneurship (Kwon et al., 2013; Wang & Altinay, 2012). Through social networks, scholars argue that entrepreneurs can engage in resource and knowledge sharing, and social capital formation. With the use of the acquired capital, desired outcomes can be reached. Social capital represents the value and resources accessible via a network of relationships (Eiteneyer et al., 2019) so plays an important part in digital ventures.

While there is substantial research showing that social capital is vital to entrepreneurial success (Smith et al., 2017), other scholars have argued that social hierarchies are embedded in social networks; hence, certain social networks could hinder entrepreneurial activity (Dy, 2019). For instance, socioeconomic status has been found to correlate with higher financial and human capital (Anderson & Miller, 2003). Therefore, entrepreneurs at the high end of the socio-economic spectrum are more likely to find favourable positions within networks (Anderson & Miller, 2003).

Disagreement also exists regarding the appropriate nature of a social network to achieve desirable outcomes for entrepreneurs (Hayter, 2013; Huggins & Thompson 2015). For example, in terms of innovation, while the importance of the role of network ties is acknowledged (Boschma et al., 2014), disagreement exists in relation to the suitability of different networks ties for processes such as product innovation and business model innovation (Su et al., 2009). Thus, different entrepreneurial settings may call for different social networks in order to be effective.

Hence, while there is agreement that social networks are an important feature of favourable entrepreneurial outcomes, it is argued there are social hierarchies embedded within social networks that work in favour of people only of high socioeconomic status. Furthermore, social networks may not be effective for all entrepreneurs. Like social networks, entrepreneurial outcomes are also influenced by an ecosystem.

Table 7 - Entrepreneurial Networks

Entrepreneurial Networks	Understanding
Networks	Social networks are an important part of opportunity development and success in entrepreneurship (Kwon et al., 2013; Wang & Altinay, 2012).
Social Hierarchies	Social hierarchies are embedded in social networks, hence certain social networks could hinder entrepreneurial activity (Dy, 2019). Entrepreneurs at the high end of the socio-economic spectrum are more likely to find favourable positions within networks (Anderson & Miller, 2003).
Network Benefits	Social networks need to be of an appropriate nature to achieve desirable outcomes for entrepreneurs (Hayter 2013; Huggins & Thompson 2015). Network ties may not be equally effective for all types of innovation (Su et al., 2009).

2.4.3. Entrepreneurial Ecosystems

There is also disagreement about the role of ecosystems in digital entrepreneurship (see Table 8 below). The ecosystem is an important concept for digital entrepreneurship (Rong et al., 2013) and success (Spigel, 2015) as it can facilitate the integration of resources and supportive elements beyond the firm-level. Initially, the business ecosystem concept was coined by Moore (1993) who used a biological metaphor to define an ecosystem as a community of interconnected actors who complement each other and create value. However, since then the ecosystem concept has been studied through an entrepreneurial lens and has become a common feature of the literature. The digital ecosystem has been defined as "a self-organizing, scalable and sustainable system composed of heterogeneous digital entities and their

interrelations focusing on interactions among entities to increase system utility, gain benefits, and promote information sharing, inner and inter cooperation and system innovation" (Li et al., 2012, p. 119). Thus, the interactions enabled by ecosystems are considered to be beneficial to digital entrepreneurs.

The ecosystem is important as the success of a digital startup relies not only on internal operations but also the community around it (Autio et al., 2018). Anybody who has access to connected devices is considered a user and participant in a digital ecosystem. The internet essentially created an open space to provide access to information, data, and knowledge. Thus, digital ecosystems offer unique opportunities for entrepreneurs (Sussan & Acs, 2017).

However, despite the benefits of a digital ecosystem, especially to digital entrepreneurial ventures, other scholars have highlighted potential issues (Nambisan & Baron, 2019). For example, role conflict can cause issues for digital entrepreneurs in a digital ecosystem. Role conflict arises because digital entrepreneurs take on the role of both a venture leader and a platform follower (Nambisan & Baron, 2019). In their study of customer relationship management (CRM) software products that serve as platforms, Nambisan and Baron (2019) found that stress caused by role-conflict can negatively impact venture performance. This is because digital entrepreneurs have less self-control as platform followers than what they are accustomed to as venture leaders, which ultimately increases stress. In turn, venture performance is affected as stress interferes with entrepreneurs' performance of important tasks such as obtaining resources and developing effective growth strategies (Nambisan & Baron, 2019). This highlights the fact that digital entrepreneurs may need to consider the costs associated with membership in a digital ecosystem. Furthermore, the authors argue that such stress can also potentially have negative effects on entrepreneurs themselves, such as through a loss of job

satisfaction (Nambisan & Baron, 2019). Thus, despite potential benefits, involvement in an ecosystem could also prove to be detrimental to entrepreneurs.

The literature also highlights the key factors in successfully building digital ecosystems. According to Kraus et al. (2018), research has identified these factors as transaction costs, digital technology, institutional entrepreneurship, and online social capital. Transaction costs refer to costs associated with connecting groups to each other. Lower transactions costs are therefore more ideal in successfully building digital ecosystems (Sussan & Acs, 2017). In terms of digital technology, it is a key factor as it underpins and enables ecosystems which connect interacting groups digitally (Kraus et al., 2018). Institutional entrepreneurship refers to the transformation of a traditional business into a digital business. In doing so, the newly transformed business can incorporate and connect already existing groups such as customers and suppliers in the digital ecosystem (Hu et al., 2016). Online social capital refers to digital ecosystems (Kraus et al., 2018) therefore suggesting that an existing ecosystem is needed to successfully build a new digital ecosystem.

Furthermore, frameworks have been proposed. For instance, Sussan and Acs (2017) integrated contributions on digital ecosystems to provide a framework of four concepts, i.e., digital infrastructure governance, digital user citizenship, digital entrepreneurship, and digital marketplace. Digital infrastructure governance refers to the need for coordination and governance to establish norms. Digital user citizenship refers to user contractual agreement for participation in a digital environment pertaining to entrepreneurial ecosystems. Digital entrepreneurship denotes the use and contribution to digital infrastructure through the new development pertaining to platforms, networks, and systems. A digital marketplace is the value creation resulting from entrepreneurial activities and the participation of users. This framework has helped to separate digital entrepreneurial ecosystems from other

entrepreneurial ecosystems built on digital platforms like online marketplaces (Avgerou & Li, 2013; Leong et al., 2016) and crowdfunding platforms (Burtch et al., 2013; Zheng et al., 2014). However, digital entrepreneurship literature focusing on the ecosystem is limited. Most studies have adopted a micro-level focus, in which entrepreneurial processes and entrepreneurial competencies are the main research points (Zahra et al., 2014).

In a similar fashion to the meso-level literature, the macro-level, which refers to elements in the external environment, is not fully agreed upon. This disagreement can be seen in concepts such as information, entrepreneurial networks, and ecosystems.

Table 8 - Entrepreneurial Ecosystems

Ecosystems	Understanding
Benefits	The ecosystem is important as success of a digital startup relies not only on internal operations but also the community around it (Autio et al., 2018). Digital ecosystems offer unique opportunities for entrepreneurs (Sussan & Acs, 2017).
Issues	Role conflict can cause issues for digital entrepreneurs in a digital ecosystem (Nambisan & Baron, 2019).

2.5. Summary

Digital entrepreneurship as a whole is a rapidly growing field that is still in search of a strong theoretical foundation and consensus in relation to prominent topics in the literature. Many scholars have made contributions to digital entrepreneurship;

however, these contributions are scattered. The meso-level and macro-level were the focus of the literature review which is aligned with the scope of this dissertation.

The meso-level contains organisational elements covered in the literature review such as digital startups, business models, and innovation. In relation to startups, disagreement exists with approaches startups should adopt. While agile development has been touted (Blank, 2020; Ghezzi & Cavallo 2018; Mukti et al., 2019; Ries, 2011), it is argued the benefits may be ambiguous (Drury et al., 2012; Janes & Succi, 2012) and the approach may not be beneficial for all startups (Blank 2018). Business models follow a similar pattern with disagreements being present that could be attributed to the different settings in which business models have been studied. Firstly, there is no agreed upon definition nor the components of business models. Secondly, disagreement also extends to the relationship between business models and business strategy with some scholars (e.g. Kallio et al., 2006; Lange et al., 2007) arguing that they are the same whereas other scholars (e.g. Magretta, 2002; Osterwalder, 2004; Zott et al., 2011) argue that they represent different aspects of a business. However, there is agreement that value propositions are delivered through business models (Kulins et al., 2016; Osterwalder et al., 2005; Teece, 2010; Zott et al., 2011). In terms of platform business models, there is disagreement on the definition of platforms and how they become successful. It is argued platforms become successful by attracting users (Nambisan & Baron 2019; Song, 2019). However, the conflicting views attribute platform success to data in addition to users and open innovation. For instance, data is also argued to be important platform business model dominance and success (Srnicek, 2017; Zuboff, 2016), while open innovation has also been touted to increase value and gain a competitive advantage (Eckhardt et al., 2018; Harryson, 2008). Finally, there are conflicting views on how and what type of innovation should be carried out. This refers to whether innovation

should be open or secretive, and whether the focus should be on product innovation, business model innovation, or both. It is argued that product innovation no longer affords a competitive advantage due to factors such as high costs of production and delivery (Chesbrough, 2007), and the ease in with which competitors can copy product innovation (McGrath, 2011). Thus, the focus should be on business model innovation (Standing & Mattsson, 2016).

The macro-level contains elements in the external environment covered in the literature review such as information, entrepreneurial networks, and ecosystems. Digital technologies have produced a variety of sources from which entrepreneurs can extract information (Tekic & Koroteev, 2019). However, it is argued that key information is available only to those with ties to exclusive networks (Dy, 2019). The conflict, therefore, extends to networks, in particular social networks, which are argued to be important to entrepreneurial success (Kwon et al., 2013; Wang & Altinay, 2012). It is argued that there are social hierarchies embedded within social networks that only benefit those of a high socio-economic status (Dy, 2019). Furthermore, social networks may not be beneficial to every entrepreneur (Hayter 2013; Huggins & Thompson 2015). In terms of ecosystems, there is agreement that entrepreneurs can experience different benefits by being involved in an ecosystem (Autio et al., 2018; Sussan & Acs, 2017). It is argued, however, that these benefits could come at a cost (Nambisan & Baron, 2019). For instance, a situation defined as ‘role conflict’ arises in which the entrepreneur is both a venture leader and ecosystem follower. This could have negative effects on the entrepreneur. Furthermore, success strategies and frameworks have also been developed for ecosystems; however digital entrepreneurship literature focusing on the ecosystem is limited most studies have adopted as micro-level focus (Biao & Dong, 2014; Zahra et al., 2014).

Based on this literature review of the meso-level and macro-level digital entrepreneurship, it is apparent that conflicts, disagreements, and lack of cohesion are present throughout the digital entrepreneurship literature. The digital entrepreneurship literature is relatively young and emerging with ideas still being challenged and established. The time has come to synergise the literature to provide an improved understanding and more singular conceptualisations. This need for an improved understanding and more singular conceptualisations serves as the void which this dissertation aims to fill. To fill this void, the following research question has been established; 1) *"What are the common concepts, themes, and understandings that underpin the Digital Entrepreneurship literature?"*

3. Research Design & Methodology

In the previous chapter, the meso-level and macro-level of the digital entrepreneurship literature were reviewed. In doing so, the splintered nature of the literature was highlighted through the conflicts, disagreements, and the general lack of cohesion which exist. The research gap was found in that there is a need for an improved understanding and more singular conceptualisations in the literature. The chapter concluded with a research question, which will help in filling the research gap. In this chapter, the research methodology employed by this study will be presented with justifications thereof, followed by the method used, data collection and data processing. The data analysis is then detailed followed by the conclusion of this chapter which summarises the main points.

3.1. Methodology

This study adopts computer-assisted text analysis, which is a method used in corpus linguistics. Computer-assisted text analysis refers to a wide range of techniques whereas corpus linguistics denotes the study of language contained within a corpus. An important role of ontology is to identify areas of knowledge, associate these areas of knowledge with other areas, then distinguish them with key terms (Gillam et al., 2005); hence, the method utilised in this study is a hybrid of statistical and linguistic techniques. The statistical technique is used to identify areas of knowledge and their associates, which is then rationalised through linguistic analysis (Gillam et al., 2005). According to Conrad (2002), corpus linguistics research has four characteristics, which are: 1) the use of a corpus, 2) the use of computer-assisted analysis techniques, 3) a focus on empirical analysis of patterns emerging from the corpus, and 4) the use of quantitative and qualitative techniques. Thus, while the findings of this study can be replicated through the use of the same corpus and

computer-assisted analysis, a significant part of this study consists of identifying norms or patterns embedded in texts. Henceforth, this study adopts the view that words or text can be interpreted in different ways; therefore, a distinction needs to be made between objective results as produced by computer software, and the subjective interpretations of the researcher (Stubbs, 2015). The subjective interpretations of the researcher depend on their familiarity of idiomatic phrases and general knowledge of cultural symbols (Stubbs, 2015). Thus, computer software can only find text and corpus statistics but not how the researcher interpreted those statistics. Therefore, different researchers can observe the same statistics using the same corpus but may interpret those statistics in different ways and arrive at varying conclusions.

Furthermore, this study adopts the view that word frequency by itself does not always convey an accurate representation of its importance. The context in which words appear should also be examined. For instance, there is a risk of failing to identify significant differences in the use of words from their more general contextual associations (Brier & Hopp, 2010). This means that words may have other contextual uses outside of what is portrayed by word frequency; hence, this study considers the context of words in its analysis.

3.1.1. Content analysis

Content analysis is a research method that identifies concepts or themes within texts. It is defined as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18). A content analysis has both a quantitative (Krippendorff, 2004; Neuendorf, 2002) and qualitative methodology (Burnard, 1991; Catanzaro, 1988); therefore, it can be used in a deductive or inductive way (Bengtsson, 2016). A content analysis can be split into two types: conceptual analysis and relational analysis (Wilson,

2011). Conceptual analysis is concerned with identifying the existence and frequency of concepts in a text whereas relational analysis is concerned with identifying the relationships between such concepts (Wilson, 2011). As explained in the previous section, the digital entrepreneurship literature is relatively young; hence there is a lack of cohesion present throughout the literature as new ideas are still emerging and old ideas are being challenged. An automated content analysis will help in addressing the research question by identifying the common themes and concepts which underpin the literature, as well as the relationships between those themes and concepts.

3.2. Research Method

The automated content analysis employed by this study used extant academic literature on digital entrepreneurship. This data (corpus) was collected from the Scopus database. Only highly ranked (A*, A and B) journal articles were collected (according to the ABDC ranking list, 2016). The search term "digital entrepr*" was used in the Scopus database. In relation to the search term, the asterisk serves as a truncation operator when it is appended to a word. Thus, Scopus returned all articles which matched "digital entrepr" as it was preceding the asterisk operator. Returned examples are included in Table 9. Results were then further filtered by subject area (Business, Management and Accounting). In total, 567 articles were collected in PDF format. A list of these articles can be found in Appendix 7.

Table 9- Search Term Results

Search term	Results
Digital entrpr*	Digital Entrepreneur
	Digital Entrepreneurial
	Digital Entrepreneurs
	Digital Entrepreneurship

To be suitable for the content analysis software employed by this study, the format of the articles had to be converted from PDF to Word documents. Conversions were done using an online file converting service called Zamzar (www.zamzar.com). Articles were converted in sets of 25 as that is the maximum number of files allowed at a time. Once all articles were converted and downloaded in the desired format, further processing was needed for the sake of accuracy. Each article had elements like abstracts, figures, tables, and reference lists manually removed so that the main content of each article was only being parsed and analysed by the software. This was to ensure that results would not be influenced by recurring words which are often found in the specified elements. For example, some of these recurring words include “design”, “keywords”, and “design”. Furthermore, each article had to be manually screened for pieces of text which had words appear together with no spaces between them which were common occurrences with many of the articles. This concluded the primary preparation phase.

3.2.1. Data Analysis

An automated content analysis was conducted by Leximancer (v 4.5), which is a machine-based analysis. Leximancer is a “text analytics tool that can be used to analyse the content of collections of textual documents and to display the extracted information visually” (Leximancer Pty Ltd, 2018, p.3). Leximancer uses a

combination of techniques to record the number of times different words occur in the data. These occurrences are then connected to the occurrence of other words. Next, segments of text are coded from one sentence to groups of sentences to quantify the output. Machine-based learning then links concepts already uncovered to other concepts. The use of Leximancer constitutes a mixed-methods approach as it conducts both qualitative and quantitative analysis. An added benefit of Leximancer is that it conducts both a conceptual and relational analysis. Furthermore, Leximancer offers a pre-analysis user interface (Project Control) in which various settings can be adjusted before conducting the actual analysis such as text processing and concept seeds settings. For example, possible adjustments include merging, deleting, renaming words, and setting the number of sentences per block.

The analysis was initially run without adjusting any settings. This was done to screen for meaningless concepts, which were then removed from the analysis. For example, words such as “analysis”, “studies”, and “used” were removed because upon closer inspection, were found to be words which generally referred to various aspects of conducting research thus did not add any meaning to the results. Furthermore, singular and plural words were merged but only after a closer inspection revealed these words were referencing the same ideas. These included words such as “network” and “networks”, “technology” and “technologies”. This then concluded the second phase of preparation, which meant the analysis was ready to be conducted.

Leximancer’s output enables visual, statistical, and interpretative analysis. The visual analysis is conducted through a graphical map of concepts which shows the main ideas in the text including information about their relationship to one another. The statistical analysis computes the frequency of ideas. The number of times concepts appear, which is represented by raw frequency, enables comparisons

of the overall most predominant concepts within the corpus. An interpretative analysis is done which involves interpreting the concepts by examining the use of concepts and themes *in situ* in its parent text. This enables the identification of ideas in the text as well as the connections between them. As text samples are data, the references which appear in the data do not appear in the reference list.

A machine-based analysis by Leximancer is superior to a manual analysis in a couple of ways (Smith & Humphreys, 2006). Leximancer can process large amounts of data in a short period, which is not achievable through manual analyses. This allows for large amounts of data to be analysed, enabling the ability to draw on a broad range of digital entrepreneurship literature. The Leximancer analysis is also immune to bias which could play a significant role in an analysis carried out by human researchers when interpreting text or conducting reviews (Gapp et al., 2013; Sotiriadou et al., 2014). This ensures the research is not influenced by bias, which could taint its accuracy. Finally, Leximancer offers stability, reliability, and reproducibility of results which would be challenging to achieve in a manual content analysis (Penn-Edwards, 2010). Thus, other researchers will be able to replicate the results. Considering the above, conducting a content analysis using Leximancer is an appropriate research method to ensure that common themes and concepts that underpin the digital entrepreneurship literature are identified.

3.3. Summary

This chapter firstly provided an overview of the philosophical background underpinning this dissertation where it is believed people are not immune from limitations when it comes to observing and understanding phenomena; therefore, these limitations must be taken into account when making claims about the truth. A content analysis was deemed to be an appropriate research method as the aim of this study was to identify the common themes and concepts underpinning the digital

entrepreneurship literature. To achieve this, data in the form of highly ranked (A*, A and B) journal articles were collected (according to the ABDC ranking list, 2016) from the Scopus database. The data then had to be processed to be compatible and accurate for the content analysis software. Next, Leximancer was highlighted as the research tool employed by this study. Leximancer conducts both a conceptual and relational analysis of large amounts of data which is important for addressing the research questions. Furthermore, Leximancer is free from bias which affects manual content analysis in addition to providing stability, reliability, and reproducibility of results.

4. Findings

In Chapter 2, the literature review and purpose of this study were outlined. In Chapter 3, the philosophical background and research paradigm of this study were explained. The research method, content analysis, was also explained. In this chapter, the findings of the Leximancer automated content analysis will be presented. In doing so, the aim of this chapter is to identify the common themes and concepts which underpin the digital entrepreneurship literature. As stated in the previous chapter, the findings are based on 567 articles (Appendix 7) which were sourced from the Scopus database. As this chapter is concerned with presenting the findings, it has been organised into thematic sections as per the Leximancer output. Each section is based on a theme and the concepts it contains starting with the most prominent theme. Themes will be written in bold capitalised italics and concepts will appear in lowercase italics in the Findings section. These are then followed by a general findings section and the chapter summary.

4.1. Leximancer Output

Figure 1 is a Concept Map of the digital entrepreneurship literature in terms of its themes and concepts. The map shows an overview of the conceptual and thematic content of the digital entrepreneurship literature. Leximancer uses machine-based learning to compute the strength of concepts within a theme, including the strength of their connection to concepts in other themes, with strength being determined by the frequency that concepts in different themes appear together. These are shown in relative terms to the co-occurrence quantity in the most prominent theme. Themes are depicted as balloons in the map and represent groups of interconnected concepts. Themes are heat-mapped to indicate the frequency, with hot colours such as red and orange indicating the most frequent connected themes and cool colours such as blue

and green indicating the least frequent themes. The map further reflects the connection between themes by their placement and the connections between them. The concepts are grouped into higher-level ‘themes’ which are shown as balloons. Concepts are formed through interconnected words that appear together within text blocks and/or appear with the same words. Concepts appear as dots with their size being indicative of their prominence. Concepts form the makeup of themes and their placement in relation to each other indicates the essence of the theme. Concepts that are connected by lines indicate strong relationships i.e., they attract one another in the literature. The concept map uses the distance between concepts to indicate if concepts appear together in the corpus. Concepts that appear close together are said to collocate in the corpus. Collocation refers to a case in which concepts usually appear more often together than would be expected by chance (Baker, 2016). This means that it is not coincidental for concepts to appear together frequently as they are often used together. These collocations may then contain more collocation patterns when examining their respective context (Gillam et al., 2005); thus, an iterative approach to identifying collocations is needed. Furthermore, Leximancer provides a thesaurus containing a list of words found to have an association with different concepts including the relevancy weightings.

Figure 1 summarises the digital entrepreneurship literature in terms of (a) the network structure of concepts that paint a picture of the corpus, (b) the concepts with the highest frequency, and (c) the concepts placed into different themes (Young et al., 2015). The theme balloons are a visualisation tool in which theme size and number are set to help interpretation. The higher the theme size, the fewer themes meaning that only more prominent themes appear on the concept map. A setting of 45% is used for theme visualisation because the study is focused on identifying the common themes of digital entrepreneurship. Concept visibility is set at 100% to

identify all concepts and their relationship to each other. Figure 1 shows 7 themes: ***Digital, Business, Social, Services, Industry, Time, Students, Internet***. These themes are named after the most prominent concepts in each one. However, ***Time, Students,*** and ***Internet*** have been omitted from the presentation of the findings due to the lack of significance. While those themes are on the Concept Map, their respective findings are not presented. This is because they were found to be outliers that have limited bearing on the core findings after closer inspection and analysis of the respective themes.

Table 10 shows the frequency and relativity of the top 20 most frequently occurring concepts. ***Digital*** is the most connected with other concepts (set at 100%), ***Business*** has 77% of connectivity with ***Digital***, ***Social*** has 65%, ***Services*** has 56%, ***Students*** has 55%, ***Time*** has 38%, ***Industry*** has 31%, and ***Internet*** has 17%. The map shows that concepts within most themes are mostly sparsely placed within the theme. As indicated in Table 10, the most frequent concept is digital with 11,603 two-sentence blocks of text within the 576 articles on digital entrepreneurship coded as that concept.

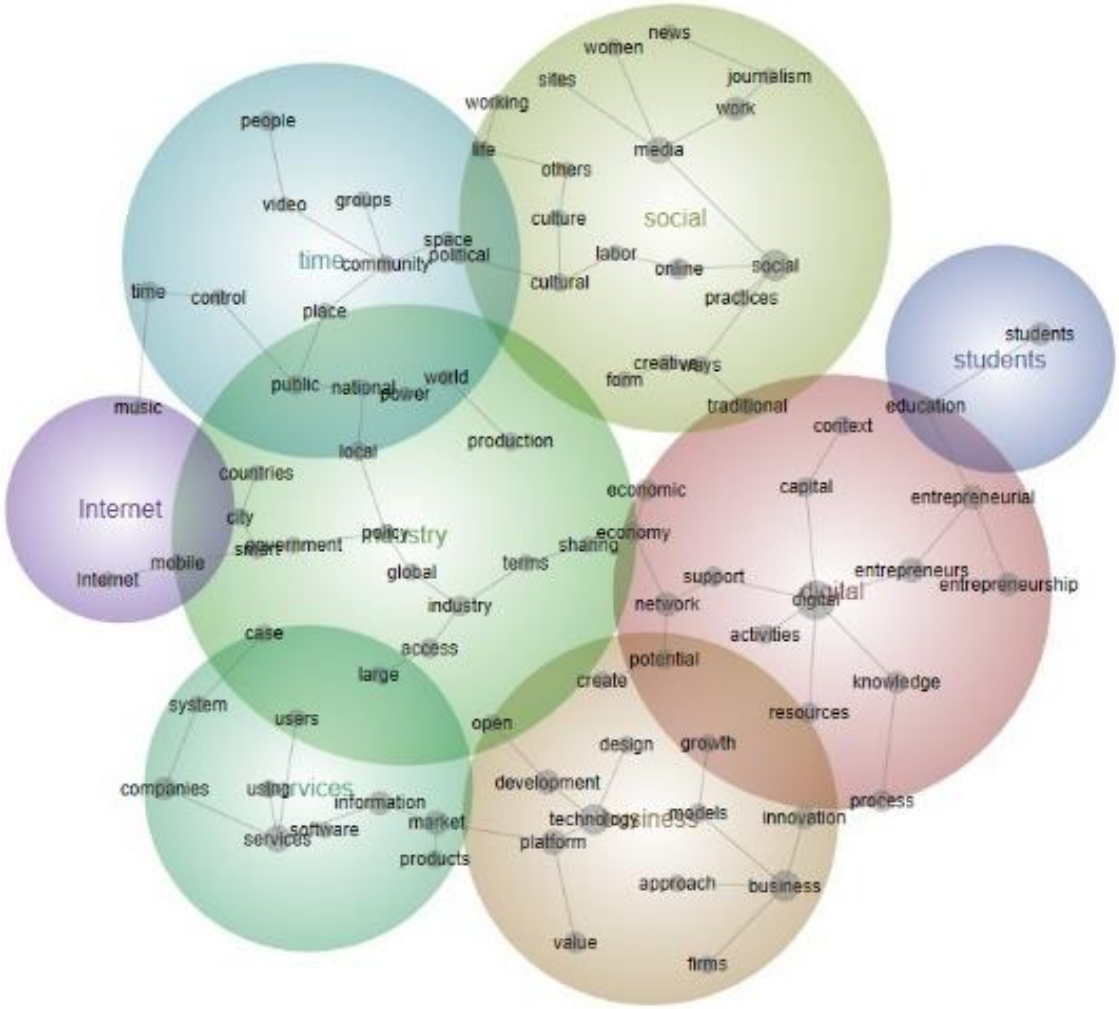

Figure 1 - Concept Map

Table 10 - 20 Most Frequently Occurring Concepts

Concept	Frequency	Relativity
digital	11603	100 %
business	8987	77%
technology	7894	68%
social	7519	65%
services	6529	56%
students	6400	55%
platform	5919	51%
entrepreneurs	5807	50%
entrepreneurial	5653	49%
media	5631	49%
work	5472	47%
companies	5422	47%
information	5410	47%
market	5404	47%
development	5097	44%
entrepreneurship	5027	43%
innovation	4823	42%
process	4694	40%
network	4641	39%
value	4480	38%

4.1.1. Theme: Digital

Digital is the most prominent theme and consists of the following concepts: *entrepreneurs, entrepreneurial, network, entrepreneurship, knowledge, process, economic, resources, support, activities, capital,* and *context.* The *digital* concept itself is linked to *entrepreneurs, capital, support, activities, resources,* and *knowledge* respectively. ***Digital*** is mostly concerned with factors which provide support to digital entrepreneurs as evident by the concepts. The thesaurus also associates *digital* with words such as "artefacts", "non-digital", "generatively", "voids", "relationality", and "outcomes".

Considering the nature of the study, it is no surprise that *digital* and *entrepreneurs* are directly linked with *entrepreneurship* and *entrepreneurial* being in close proximity. These concepts often appear together in the corpus. Furthermore, *entrepreneurial* is directly linked to *education*. As shown in appendix 1, text related to *entrepreneurial education* focuses on the influence of education on entrepreneurial intentions and how education facilitates entrepreneurs.

The *digital* concept is linked and closest to the *activities* concept which suggests that they attract one another strongly within the corpus. Appendix 1shows *digital activities* in the literature generally refer to a wide range of activities associated with digital entrepreneurship such as opportunity assessment, market research, technology development and testing, opportunity exploitation, and network building. Furthermore, the thesaurus associates *activities* with words such as '"value-adding" and "social media". The former being a targeted outcome of some activities and the latter referencing a medium in which some activities are carried out.

The *digital* concept is linked to *resources* and *knowledge* with the latter being further linked to *process*. Furthermore, *knowledge* is located close to *resources* which suggest these terms often appear together.

In relation to digital entrepreneurship, *knowledge* and *resources* are important for venture prospects. Leximancer analysis highlights their importance, with texts often attributing knowledge to favourable entrepreneurial outcomes while also focusing on other aspects such as knowledge acquisition and knowledge exploitation (Appendix 1).

In terms of *knowledge* and *process,* the Leximancer analysis shows acquiring and sharing *knowledge* is a *process.* Also, *knowledge* is gained from different processes. Furthermore, *knowledge* serves as inputs in many processes pertaining to digital entrepreneurship. This demonstrates a strong attraction hence their linkage to each other. Some of the processes highlighted include brand building, effectuation, and innovation as shown in Appendix 1.

The *digital* concept is also linked to the *capital* concept. The Leximancer analysis highlights the different forms of capital such as financial capital, psychological capital, social capital, venture capital. However, the focus tends to predominantly be on social, and venture capital respectively. As shown in Appendix 1, both forms of capital are considered important to startup development and success.

Lastly, *digital* is linked to *support* which is then linked and located close to *network.* The close proximity of *support* to *network* suggests that these concepts appear together quite often in the corpus and sums up the manner in which networks are viewed. For instance, “resourcing” is associated with *network.* Hence, networks are seen as taking on a supporting role for entrepreneurs. This is reflected in Table 11 and Appendix 1 portraying networks as a resource tool which serves as an important part of favourable entrepreneurial outcomes.

4.1.2. Theme: Business

The ***Business*** theme consists of concepts that relate to elements of a digital business, including frequently occurring concepts such as *innovation* as well as less frequent

concepts including *technology, platform, development, innovation, value, potential, models, growth, firms, create, approach, design,* and *open.* Most of these concepts reflect the basic elements of a digital business, including important components pertaining to business value and business models.

The *business* concept is directly linked to *firms, approaches, models,* and *innovation.* The *business* concept is also the second most connected concept. With *business, models,* and *innovation* being in such close proximity to each other, it indicates 'business models', 'business innovation' and 'business model innovation' appear frequently in the literature. Furthermore, the *business* thesaurus contains words and phrases such as "viability", "customer-development", "canvas", "angels", "designing scalable digital business models", "maker-entrepreneurs", and "lean", which evidently suggest the business model forms a significant part of the literature.

Approaches employed by digital businesses have also been a focus as evidenced by the *business* and *approach* link. Appendix 2 show *approaches* have been studied with different focuses such as the business model, development, and innovation. Furthermore, the *approach* concept is associated with words such as "effectual", "decentralised", "system-based", "user-centric", and "value-creation-centric". This highlights the ways in which approaches have been studied in the corpus.

The *models* concept is also linked to *growth* and *technology,* and *innovation* is linked to *process* in the ***Digital*** theme.

In the case of *models* and *growth,* this suggests that focus has been on how business models are able to capitalise on growth. For instance, the thesaurus shows that *scale-up* is a word highly associated with growth.

Models link to *technology* highlights the relationship between business models and technology in the corpus with technology being the enabler of business

models in digital entrepreneurship. Appendix 2 expands on this linkage by highlighting technology a source of business model change, and in some cases, new business models altogether.

Innovation and *process* suggest innovation itself is thought of as a process, and not a one-off event. As shown in Appendix 2, *innovation* in digital entrepreneurship is a process consisting of iterative actions usually involving customers.

The *technology* concept is also prominent as indicated by the dot size. In addition to *models,* other concepts directly connected to *technology* consist of *platform, development,* and *design.*

Unsurprisingly, *technology* is not only linked to *development* and *platform* but these concepts also amongst the most prominent concepts as indicated by their relevance (68%, 44%, and 51% respectively) given that digital entrepreneurship is enabled by technology and the development thereof. These concepts are also in close proximity to each other. Text examples from the corpus as shown in Appendix 2 highlight all the different ways in which technology development impacts digital entrepreneurship. This includes opportunity recognition, resource assembly, and strategising. Furthermore, text examples also show technology itself leads to the development of other entrepreneurial aspects such as a *network*. Furthermore, platform development is also a prominent focus in the corpus as shown in Appendix 2.

The *technology* link to *design* refers to the integration of technology in designs pertaining to digital businesses such as business models, platforms, and products. This has been the predominant focus in texts in which these concepts appear together. For instance, technology is often seen as the enabler of new designs in platforms and other business models.

The *platform* concept is further linked to *value* and *market* within the ***Services*** theme. The link of *platform* to *market* in the ***Services*** is indicative of the product of *platforms. Platforms* tend to be service orientated meaning that they generally do not provide tangible products but instead provide services such as bringing customers and producers together. In terms of the *platform* and *value* connection, it suggests that the focus of providing value forms the dominant perspective of platforms in the corpus. The thesaurus reinforces this by associating *platform* with words such as "complementors" and "multi-sided", and value is associated with "proposition", "customer's", "non-paying", "co-creators", "prototype". Text examples in Appendix 2 also highlight the ways in which a platform's value increases such as 'network effects' and open innovation.

The *development* concept is linked to *open.* In this sense, open refers to development/innovation strategies and draws attention to the manner in which *development* has been viewed in the corpus. For instance, *open* is associated with "cooperativism", "involvement" and "open-source" in the thesaurus alluding to the role external actors play in the development process.

4.1.3. Theme: Social

Social has a more diverse range of concepts mostly pertaining to online aspects of digital entrepreneurship. The theme contains the following the concepts: *media, work, online, cultural, practices, traditional, women, ways, news, creative, form, culture, journalism, others, working, labor, sites***.** In addition to *social*, both *media* and *work* share high prominence as indicated by their respective dot sizes and relevance (49% and 47%).

The *social* concept is linked and located closest to *online* and *practices,* while also being linked to *media* and *ways.* The thesaurus associates *social* with words such as "multicultural", "interactivities", "bonding", "self-empowerment", "accrual",

"self-branding", and "reputation". These connections and associative words characterise the different ways online aspects are utilised for entrepreneurial endeavours. For instance, *practice* is associated with "informational-capitalist" in the thesaurus. Thus, the accrual of resources such as information is one such example in the corpus.

The role of social media is acknowledged considering the high relevance of these concepts. Social media is a digital business type, usually in the form of platforms. Furthermore, social media is also used as an engagement tool by digital entrepreneurs. For instance, text examples in Appendix 3 reference social media reach as a source of attracting funding and other networking activities. Furthermore, text examples in Appendix 3 also show that social media engagement increases the credibility and reputation thus owing to the idea of "self-branding" or personal branding. On top of attracting investors and branding purposes, social media is also considered a source of opportunity recognition.

4.1.4. Theme: Services

The ***Services*** theme is mostly reflective of the fact that digital entrepreneurial ventures are service-based. The theme contains the following concepts: *market, information, companies, case, products, users, using, system, software.* In addition to *services, market* and *information* make up the more prominent concepts in the theme.

The *services* concept is connected to *information, companies, users, using,* and *software.* The concept itself is associated with words such as "servitization", "userness", and "transaction-based". As the concept map shows, *software* is located close to *services.* This alludes to the nature of some digital services in that the service is delivered in the form of software whether it is a phone app, web application, or software-as-a-service (SaaS). Furthermore, *information* being in such

close proximity suggests that it appears together with *services* and *software* in the corpus.

Therefore, *information* is a prominent concept with 47% relevance which is also linked to *market.* Market information is seen as crucial to the success of digital startups. It is seen as providing insights into market segments which leads to opportunity and risk identification. Furthermore, market information is collected to build critical mass which is considered important to entrepreneurial success. However, the *information* concept is associated with words such as “asymmetry”, “synthesis”, “overload” which alludes to the challenges that digital entrepreneurs need to overcome in relation to obtaining and making sense of information. For example, platforms owners are usually able to see every interaction and retain all information of customers such as purchasing history. This information provides insights into potential market opportunities. However, with digital entrepreneurs not having access to this information, new ventures may be threatened. This challenge of information asymmetry faces digital entrepreneurs looking for potential opportunities.

The *market* concept is further linked to *products.* The decision to launch products depends on market sentiments according to text examples shown in Table 11 and Appendix 4. Thus, the Leximancer analysis has focused on the many different market conditions that need to be considered by digital entrepreneurs before creating products. These include testing market demand for product, protecting brand image when launching Minimum Viable Product (MVP), and analysing markets for market information.

The focus of attracting users corresponds with *service* linking to *users* and *using.* Users differ to customer in that they use a service whereas customers perform a purchasing transaction. Hence, users are vital to the success of a digital business

because they generate value, thus the Leximancer analysis has focused on the many different aspects pertaining to users. The *users* concept also overlaps with the ***Industry*** theme. Nonetheless, strategies such as attracting users, engaging users, and maintaining users have formed the dominant perspectives as shown in Appendix 4.

Table 11- Text Examples for Prominent Concepts in Themes

Theme	Concept	Text Examples
Digital	*network*	"Most founders used digital networks to foster, maintain, or enhance weak tie relationships, albeit with different levels of intensity, and the majority used them to at least maintain strong tie relationships." (Smith & Smith, 2019, p. 4) "The value network can include partners, distribution channels, coalitions and customers (Osterwalder and Pigneur, 2010; Shafer et al., 2005). Such networks extend the firm's resources and can help achieve economies, reduce risk and help tap into new knowledge or resources." (Liu & Bell, 2019, p. 517)
	process	"Many scholars have agreed that entrepreneurship is an organizational process that contributes to firm survival and performance, and accordingly, entrepreneurial activities are vital for all firms in environmental volatility (Covin and Slevin 1989; Drucker 2014; Entrialgo et al., 2000; Lumpkin and Dess 1995; Miller 1983; Zahra 1993)." (Paek & Lee, 2017, p. 886) "High information quality improves the functional value of any process as it creates a knowledge bank for the decision-maker. Knowledge that is complete, accurate and relevant and in the right format leads to good decisions." (Srivastava et al., 2019, p. 2598)
Business	*platform*	"Platform users played a significant role in educating, i.e. creating awareness about the platform and about how to use the service." (Boon, et al., 2019, p. 911). "One of the biggest challenges in creating a new platform is to attract initial users when the platform enjoys limited network effects. Traditionally, a new platform may incentivize early adopters by offering free services or giving big discounts." (Chen, 2018, p. 572)
	value	"Entrepreneurial opportunities and new business models In order for such new technologies to realize disruption, entrepreneurs must develop business models that embody attractive value propositions (Demil, Lecocq, Ricart, & Zott, 2015). A business model explicates a firm's logic for value creation and capture." (Langley et al., 2017, p. 784) "The focus should be on the transaction or matching component that 'delivers' the value proposition. The conceptualization of the whole of the business model process should be underpinned by a simple strategy of speed, small scale where possible, iterative experimentation approach and simple logistics." (Standing &

		Mattsson, 2016, p.397)
Social	*media*	"Digital entrepreneurs recognise new opportunities through their use of social media. Digital entrepreneurs are quick to act on entrepreneurial intention, although not always within a formal structure." (Dutot & Van Horne, 2015, p. 84) "Social media technology has been used mainly for customer interaction in the sales, marketing, and support channels [64] and in a business model context, it is an important element of Web 2.0 technology. The presence of the website in major social media applications such as Facebook and Twitter is therefore important and is counted as additional technology because it is external to the platform—that is, it is not technology that the platform has incorporated itself such as its own discussion forum" (Holland & Gutiérrez-Leefmans, 2018, p. 170)
	work	"In both cases, personal relationships with climbers, editors, and brands play a key role in securing work opportunities. In the case of professionals, these relationships have been established throughout the years and depend upon extended social networks." (Dumont, 2015, p. 34) "Within the group of the self-employed, there is great heterogeneity and increasingly blurred boundaries between dependent work and self-employment must be acknowledged. The variety of different forms of work behavior and social security is growing due to different economic and social status groups (European Commission, 2018)." (Bögenhold, 2018, p. 133)
Services	*information*	"All the entrepreneurs studied explained how they had to spend considerable time and money collecting market- or industry-relevant information (e.g., about customers and partners) in order to build a critical mass, seen as crucial to the success of digital businesses." (Boojihawon & Ngoasong, 2018, p. 134) "As more and more products and services are offered to the market, finding a place in the market is not always easy. Entrepreneurs should know how to use ICT tools and applications to find the right information and analyse the market to find the suitable success possibility." (Le Dinh & Ayayi, 2018, p. 10)
	market	"A market may not exist for the product, or the prevailing price in the marketplace may not sufficiently compensate producers for the costs of bringing the product to market. One indication of the potential demand for a new product is the demand for similar commercial products that already exist." (Eckhardt et al., 2018, p. 375) "Entrepreneurs must always focus on questions about the available products or services and how to generate income and offset costs. These questions allow them to identify the

		opportunities to meet the market demand." (Le Dinh & Ayayi, 2018, p. 10)
Industry	*access*	"Separation of the content from the medium enables digital components to access and combine data and functionalities originating from heterogeneous sources, transcending industry, market, and product boundaries (Yoo et al., 2010). In certain instances, these characteristics on their own may give rise to new functionalities and help generate new entrepreneurial opportunities." (Nambisan, 2017, p. 1038) "First, we note that the relative density and diversity of cities constitutes a critical enabling condition for digital entrepreneurship. Access to venture capital and skilled labor makes it possible to build competencies in those settings were skill renewal is critical." (Geissinger et al., 2019, p. 884)
	economy	"Drawing from these definitions, we define the sharing economy as 'an economic model enabled and facilitated by the Internet and Web 2.0, in which users systematically share underutilized assets for monetary or non- monetary benefits'." (Richter et al., 2017, p. 301) "Technology has begun to transform business and to create a ``new'' digital economy although the extent to which business practices will be changed is still being debated. As a result, new economy innovators have only begun to develop new business models, strategies and processes." (Lewis et al., 2004, p. 206)

4.1.5. Theme: Industry

Industry mostly contains concepts which pertain to macro-level factors that affect digital entrepreneurship and businesses. The concepts include *access, economy, local, production, city, smart, mobile, terms, global, policy, large, sharing, countries, government, world, power.*

Industry is linked to *access, terms* and *global*. The *access* concept denotes the importance placed having access to industry specific actors and resources as shown in Appendix 5. While industry settings differ, the common trend emerging is that access to industry specific resources such as consumer information, industry

wide information, financing, technological knowledge and skills are vital for digital entrepreneurial endeavours.

The *industry* linkage and close proximity to the *global* concept allude to the scale of the many industries in the digital space. Due to digitalisation, many industries have been able to span across different countries with some being global. This is due to the ease in which digital ventures are able to achieve expansion without facing the same barriers that traditional ventures need to overcome. Hence, taking global factors into account is important in digital entrepreneurship even when discussing early-stage businesses such as startups. This has been reflected in the Leximancer analysis with *global* generally referencing the global nature of many industries.

A noticeable concept linkage in this theme is *sharing* and *economy*. The sharing economy is an economic system enabled by digitalisation in which assets or services are shared (Richter et al., 2017). It is then no surprise that *network* is also linked to economy as the sharing economy is dependent on a network of users interacting with each other. As previously mentioned, *users* is linked to *services*. This ties in with the dependence of the sharing economy on a network of users as any businesses in the sharing economy tend to be services. These linkages reflect the nature of the sharing economy and also the attention the sharing economy has received. For instance, future trends, the impact on traditional businesses, and relevant business models are just some of the sharing economy aspects which are highlighted.

Furthermore, in this theme, *policy* is linked to *global, local,* and *government.* These geopolitical concepts are a testament to the globally connected nature of digital entrepreneurship. Policies enacted by governments have the potential to impact digital entrepreneurship on a variety of levels both locally and globally. For

instance, the Leximancer analysis highlights the ways in which policies are able to impact entrepreneurship. These impacts range from market shaping to opportunity recognition. For instance, each country has different policies pertaining to digital businesses and online markets. These policies have the potential to affect digital entrepreneurial endeavours. One such policy is the flow of *information*. Restrictions on *information,* which as mentioned is used for opportunity recognition, may in turn, restrict digital startups. In contrast, countries in which *information* is more accessible may serve as a source of opportunity for not only local entrepreneurs but also international entrepreneurs due to the connected nature of digitalisation.

4.1.6. Further Analysis

The ecosystem concept is conspicuous by its absence from the Concept Map altogether. Since prominence depends on the relativity and frequency of a concept, it perhaps can be concluded that "ecosystem" is not a strong term in the corpus.

4.2. Summary

In this chapter, the Leximancer content analysis of the corpus provided output in the form of a concept map in which the themes and concepts underlying the digital entrepreneurship were identified. The concept map showed which concepts are closely related to each other in the literature as well as their relativity. Furthermore, the nature of the relationship was inspected based on text examples and associative terms in the thesaurus. In order, ***Digital*** is the most prominent, followed by ***Business***, ***Social***, ***Services***, ***Industry***, ***Time***, ***Students***, and ***Internet.*** The top 20 concepts were also identified. These consist of *digital, business, technology, social, services, students, platform, entrepreneurs, entrepreneurial, media, work, companies, information, market, development, entrepreneurship, innovation, process, network,* and *value.*

5. Discussion

This study set out to identify the underlying themes in the digital entrepreneurship literature. In doing so, the aim is to fill the research gap which is the need for improved understanding and more singular conceptualisations of the digital entrepreneurship literature. Chapter 4 presented the findings in which prominent themes and concepts were identified by the Leximancer analysis. This chapter will focus on discussing those findings and addressing the research question. The chapter has been organised to reflect the prominent themes and concepts. Firstly, the main findings from the Digital theme are discussed: activities, knowledge, and network respectively. Secondly, findings pertaining to business models, platform business models, and innovation are discussed respectively. Next, the discussion focuses on prominent findings from the rest of the themes: social media, information, industry access, and geopolitical factors respectively. Following that, the theoretical contributions of this study are outlined. Finally, this chapter concludes with the practical implications of this study, followed by concluding remarks.

5.1.Digital

5.1.1. Activities

Digital entrepreneurship can essentially be reduced to a set of activities carried out by an entrepreneur in both a digital space and non-digital space. The current study shows discussions of activities have been from a digital perspective, so it is possible these results are due to the studies of different parts of the digital entrepreneurial process. This is because the entrepreneurial process entails every entrepreneurial action, made up of activities, starting from the very beginning of an entrepreneurial endeavour. Thus, there is shared understanding of activities as actions making up the

entrepreneurial process. As illustrated in the literature review, activities could cover a wide range of actions pertaining to digital entrepreneurship from finding resources to innovating products, services, business models, etc. Therefore, this study supports the extant literature in that activities form the makeup of actions taken by digital entrepreneurs during the entrepreneurial process.

5.1.2. Knowledge

The prominence of knowledge may be explained by the technological intensive focus of digital entrepreneurship. There is a shared understanding of knowledge being a valuable resource in digital entrepreneurship, serving as inputs at many stages of the entrepreneurial process while also being the product of processes, in the form of new knowledge.

In regard to serving as inputs, knowledge has been attributed to aiding and enabling processes such as opportunity recognition and business planning. For instance, the acquisition of new knowledge is considered important for the creation and growth of digital startups (Ratzinger et al., 2017). As such, digital entrepreneurs often, directly and indirectly, engage in knowledge acquiring processes as knowledge is a valuable resource. Digital technologies have enabled different ways of pursuing entrepreneurship where knowledge is gained through co-creation between diverse actors. Hence, there is an agreed understanding of the need to engage with external actors in order to acquire new knowledge. For instance, a direct process is knowledge sharing which is important in acquiring new knowledge, collaboration, and network success. Knowledge sharing is external knowledge acquisition and willingness to share knowledge externally, enabled by digital technologies in which digital entrepreneurs are able to obtain knowledge (Boeker et al., 2019). As for indirect knowledge acquisitions, processes such as development and innovation in which acquiring knowledge is not the main purpose can result in

entrepreneurs gaining new knowledge. Furthermore, given the technological intensive focus of digital entrepreneurship, knowledge is often the by-product of processes. Consistent with the extant literature, this research found knowledge to be a valuable resource which serves as inputs at many stages of the entrepreneurial process while also being the product of processes.

5.1.3. Network

The picture that emerges from the findings is the role that networks play in supporting digital entrepreneurs. The key shared understanding is that digital entrepreneurs and platforms depend on networks for success.

Digital entrepreneurs are able to utilise networks to gain access to different resources that ultimately support their entrepreneurial endeavours and contributes to their success. For instance, digital entrepreneurs use digital networks to build relationships and maintain strong ties (Smith & Smith, 2019) so that access to the capital pool becomes larger which essentially acts as support, meaning startups are more likely to be successful. Resources provided by networks also include information (Eiteneyer et al., 2019; Smith & Smith, 2019). However, what separates networks from other sources of information is the mitigation of information overload and asymmetry (Du & Mao, 2018). For example, some of the issues that are highlighted in the literature review include information asymmetry and overload (Dy, 2019; Hole, 2019). Digital entrepreneurs have to overcome these issues to find insightful and valuable information. However, as networks are usually characterised by their exclusive access to valuable resources, insightful information about the market can be utilised by digital entrepreneurs that have access to these networks. Thus, information synergy is a supporting tool afforded to digital entrepreneurs via networks.

Furthermore, the significance of network in the sharing economy was also identified by the Leximancer analysis. The sharing economy is predominantly made up of multi-sided platforms that are dependent on networks of users interacting on the platform. Without these networks of users, platforms would not be successful. This is because networks of users increase the value of platforms as will be discussed in the next section.

Another key shared conceptualised understanding pertaining to networks is access via Venture Capitalists (VCs). VCs are active in the startup space, therefore well-connected in terms of networks and access to resources. VCs are able to provide new ventures with resources that are critical to survival such as contacts, information, and knowledge (Cavallo et al., 2019). Attracting VCs and gaining access to networks is thus important for digital entrepreneurs.

These findings broadly support the extant literature in this area linking networks to entrepreneurial success. More importantly, the findings demonstrate the strong reliance of digital ventures on network structures – much more so than ventures that are offline and confined to the physical world. This is because digital ventures are not confined by physical boundaries, but can essentially reach global audiences/customers/partners. Therefore, network effects and network structures are critical to success.

However, this study has been unable to demonstrate the existence of social hierarchies embedded within social networks that only work in favour of people of high socioeconomic status as argued by Dy (2019) in the literature review. For instance, scholars (e.g., Eiteneyer et al., 2018; Smith & Smith, 2019; Srinivasan & Venkatraman, 2017) imply just by having access to networks, digital entrepreneurs are able to experience the benefits afforded to them by networks. This means that

digital entrepreneurs with access to networks are able to utilise network resources, suggesting that social hierarchies are generally not a factor.

5.2. Business Models and Business Model Innovation

5.2.1. Business Models

A business model is as an articulation of opportunity exploitation through activities and resources to create, deliver, and capture value. However, this is a traditional conceptualisation, and not necessarily appropriate for digital ventures because it does not fully factor in network effects on organisational sustainability. In terms of digital business models, the key shared conceptualisation understandings within the literature could be separated into three parts pertaining to the value proposition, growth, and success.

It is important to note that the text examples in Table 11 on value, apart from platform value, are mainly used within the context of value propositions of business models. There is a distinction between digital business models and traditional business models due to digital technologies. Digital technologies make it possible to turn components into data sources and enable new connections in novel ways (Tekic & Koroteev, 2019), which is also reflected in the above observation about networks being prominent. Thus, digital business models take advantage of digital technologies by incorporating user and network engagement into the value proposition (Gupta & Bose, 2019). In doing so, the digital enterprise is not the sole creator of value, which is in contrast to traditional business models. Where the value propositions of traditional business models reflect the enterprise as the sole creator of value, the value proposition of digital business models brings users and networks together to co-create value. Hence, engagement with users and networks for value generation is an integral part of the value proposition of digital business models.

This differs from the literature in that some scholars still leverage a traditional conceptualisation of business models when exploring digital ventures. These findings prove scholars need to be cognisant of the network dimension to value propositions and digital ventures. Furthermore, digital business models differ from traditional business models in that users and networks together, generate value with digital businesses.

A value proposition which is attractive to customers subsequently attracts VCs as customer interest is usually perceived by VCs as a sign of a viable business model (Cavallo et al., 2019). Furthermore, the value proposition also helps opportunity exploitation. For instance, new technologies will only cause disruption with business models that consist of attractive value propositions (Demil et al., 2015; McGrath, 2011). New technology is also useless as a proposition without a business model built around it to commercialise it. As new technology will provide new opportunities, there is a need for a business model to capture value from it. Thus, there is a shared understanding that the business model and value proposition are both important for the viability of a digital business.

Secondly, this study found growth to be a key feature of digital business models. This result may be explained by the fact that startup growth is dependent on digital business models, thus essentially making digital business models the driver of growth. As digital technologies enable startups to create novel business models that have the potential to disrupt existing industries, digital business models are generally the competitive advantage afforded to digital entrepreneurs. Hence, the point of difference between traditional businesses and digital businesses are the dimensions of their respective business models. Therefore, digital entrepreneurs are more likely to use this point of difference as the driver of growth. This is in contrast to traditional entrepreneurship in which differences are generally pursued in terms of the product

itself or businesses processes to achieve growth. Essentially, the driver of the growth of traditional startups is different from digital startups. Without the physical boundaries of traditional businesses, digital ventures can experience extraordinary growth and even be “Born Globals”, which are ventures that are able to overcome barriers of expansion into global markets without first establishing a strong local market presence. Thus, the digital business model as a driver of growth is another key shared understanding of the business model concept.

Finally, designing business models that attract users to co-create is important for success. Co-creation is defined as “the joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically” (Galvagno & Dalli, 2014, p. 644). The traditional view emphasises the alignment between the startup's business model and the needs of its target market as important for business model success as poor design often results in the creation of a business that does not serve a market need (Tong et al., 2015). When there is no market need, customers are therefore not going to use the products or services offered by a startup. However, the above discussion shows the network dimension should be taken into account when discussing digital business model success. The ability of a startup to design a business model that attracts users to co-create value is important. Furthermore, a market need does not necessarily need to exist to achieve digital business model success. The affordances offered by digital technologies such as the ability to turn components into data sources, and enable new connections in novel ways mean digital business models can form whole new markets altogether. However, a network of users to co-create value is important especially in the case of new markets where market traction is gained by attracting users.

5.2.2. Platform Business Models

A platform business model is a business model that creates value by bringing different groups such as producers and consumers together to facilitate interactions. There are distinct conceptualisations exclusive to platform business models that should be noted. Furthermore, it is implied that platforms are at the centre of ecosystems.

Users on a platform increase the value of a platform. This is because the interactions of users on a platform attract producers which in turn attract more users and so on and so forth. This phenomenon has come to be known as "network effects" in the literature. Users also spread awareness in the community (Boon et al., 2019) thus acting as platform marketers as well. Taking these points into account, it is then a prerequisite for platforms to be attractive to users (Bogusz et al., 2018), as per the shared understandings of business models stated above. This is because the mass accumulation of users is important for the success of platform businesses as the effects thereof allow platforms to gain traction in the market. Successfully accumulating users means platforms can rely on positive feedback effects of user interactions (Song, 2019). Thus, the importance of user value co-creation for platform success is a key understanding.

Platform business models are enabled by technology. The ability of platforms to bring users together digitally is dependent on the affordances provided by technology. As a result, the technology of platforms plays an important part in attracting and retaining users (Mancha et al., 2018). For instance, platforms need to ensure technology is up to date as the user experience is shaped by the technology of the platform. Considering the prominent role of technology in platform business models, platforms, therefore, incorporate its technological capabilities as the focal point in their value propositions. As already mentioned, the value proposition

underpins the business model. Therefore, platforms can work out whether their technology serves a need in the market and attracts users through the value proposition. This is an efficient way to validate the platform's technology which is an important factor in attracting and retaining users. Thus, with technology enabling and platforms, there is a key shared understanding that platforms should incorporate their technological capabilities into their value proposition as it is important for attracting and retaining users.

Considering the above key shared understandings pertaining to platforms, it can then be established that platform success depends on both users and information. Firstly, attracting users is important to achieve network effects and subsequently value generation on a platform. However, platform success is further driven by the platform's ability to meet the needs of users through its technology. These needs are discovered in data based on user interactions. This information is essentially a source of opportunity as platforms can make business model changes to exploit potential opportunities to retain and attract more users. Hence, this study supports Zuboff, (2016) and Srnicek (2017) who argue that platform success depends on both user attraction and data.

From the text examples in Appendix 2, it is evident that ecosystems are often mentioned alongside platforms as an attribute. The absence of ecosystem as a concept could therefore be attributed to the fact that due to the connected nature afforded by digital technologies, there is an expectation of platforms being at the centre of ecosystems. Researchers tend to focus on the operations of platforms but neglect their external environments. This is perhaps to the detriment of understanding a critical concept like ecosystems in digital entrepreneurship. As the findings show, the performance of startups is not only dependent on their internal operations but also how they interact with and effectively utilise resources from the

external environment. Hence, the lack of scholarly attention given to ecosystems hinders further understanding of such a critical aspect of digital entrepreneurship. So while it is implied platforms are at the centre of ecosystems by scholars (e.g., Eckhardt et al., 2018; Song, 2019; Zhu & Iansiti, 2012), it is not always explicitly stated as it is an expectation that a platform's existence creates an ecosystem due to digital technologies. Hence, scholars do not explicitly mention it as often compared to ecosystems of traditional businesses. Based on the above, this study defines digital business models as the value propositions, activities, and resources of a firm, enabled by digital technologies that collectively operate as platforms for networks embedded within ecosystems to come together and co-create value. Although other scholars have made the assertion, this study provides empirical evidence for this kind of definition as most fitting for digital entrepreneurship. Furthermore, the core components of a digital business model could be reduced to the value creation network and digital value capture based on the above understandings.

5.2.3. Innovation Types

In terms of innovation, this study found business models to be the main focus over products. Product innovation refers to the creation of new products or the improvement of existing products in an effort to better satisfy the changing needs of customers. While the traditional focus on innovation in business has generally been on product innovation (e.g., Liu & Chen, 2015) and new product development (NPD) (e.g., Cooper, 2018), the findings show digital entrepreneurship places emphasis on business model innovation. Product innovation and NPD generally involve tangible goods whereas business model innovation encompasses all areas of the business model such as value propositions, partners, networks, and customer relationships in what could be referred to as a Service Dominant logic view of innovation. Service dominant logic states that value creation is shifting away from a

focus on transactions of tangible goods, to a service dominant focus which centres on intangible resources and customer relationships as a source of value creation (Vargo & Lusch, 2016). Furthermore, SD logic states the basis of all exchange is service for service. This is because any material good – e.g., a car – provides a service by allowing users to continuously benefit from its usage such as getting from A to B. Hence, SD logic is also about the fact that all money and material goods are simply intermediaries in the service for service exchange process. In turn, this is also how it is extrapolated that all value is co-created, because without different actors coming together and exchanging their resources (especially knowledge and skills) for others', then no value would be created. Business model innovation is therefore a process in which changes are made to the business model with the aim of creating value through intangible resources and customer relationships.

These findings are consistent with the digital entrepreneurship literature in that attention is very much away from product innovation and NPD, and more focused on business model innovation and higher-level concepts. This is because it is argued that product innovation no longer offers competitive advantage (Xu & Koivumäkia, 2018) as product innovation generally does not offer the same degree of differentiation in which an entire market can potentially be created from innovation. Furthermore, business models cannot easily be copied because it is based on unique factors such as knowledge, resources and skills. Furthermore, because it is internalised, it is hidden from competitors. This study refines this view by arguing that digital business model innovation should be the main focus because it is more likely to lead to rapid growth and success due to digital technologies being at the centre of digital business models. Business model innovation results in value creation in novel ways that differ from competitors. In doing so, there is potential to

create a new market altogether as digital ventures develop unique business models. This leads to new demand, which when coupled with the connected nature of digital ventures, makes rapid growth more likely. This is aligned with the idea of "generativity", which is an affordance of digital technologies that facilitates expected actions by a large number of users allowing digital ventures to react to change and consequently leads to growth (Zittrain, 2006). The dominant focus on business model innovation has led to key conceptualised understandings of business development approaches. This understanding dictates that these approaches should take on a user-centric and value-centric view.

Development approaches are the ways in which startups go about developing and innovating elements of the business. The findings bring cohesion to development approaches in contrast to the disagreements in the extant literature. Considering the key shared understandings of digital business models pertaining to value propositions, growth, and success, it is evident why development approaches have taken the route of not only involving users but also making them the focal point. Thus, the key shared conceptualisation of digital business model development approaches is that they should be user-centric. This is because the inputs of users are intrinsically linked to each other and perhaps the most important factor in these digital business model understandings. This is because opportunities need to be converted into viable concepts through user feedback that indicates the attributes and functionality needed (Nambisan & Zahra, 2016). Hence, inputs of users are used as cues to the changes or improvements that could be made to improve the business model. This is not a one-off event but often an iterative process. Digital technology offers affordances like flexibility and modularity thus justifying the iterative user-centric development process which allows startups to change and get their business

model right without enduring high costs associated with traditional business model change.

These findings therefore broadly support agile development approaches such as Lean Startup Approaches (e.g., Blank, 2020; Ghezzi & Cavallo 2018; Ries, 2011) as affordances offered by digital technology means startups can benefit from agile development in developing their business models.

5.3. Further Discussion

5.3.1. Social Media

Social media serves as a platform for many entrepreneurial activities such as branding, finding information, marketing, and promotional tools etc. Access to different sources of funding is directly associated with social media reach. For instance, VC funding success is often associated with frequent use of social media (Eiteneyer et al., 2019). Funding is important for digital entrepreneurs especially in the startup phase and could determine success. However as previously established, benefits relating to the involvement of VCs extend beyond funding. These benefits serve an important role for many aspects of a business such as translating the value from social capital into concrete innovation (Eiteneyer et al., 2019).

Furthermore, there is an agreed conceptualised understanding of online mediums, especially social media, being a prominent source of information (Boojihawon & Ngoasong, 2018; Dutot & Van Horne, 2015; Steininger, 2018). Social media has enabled the sharing of resources by providing structures for online platforms that promote sharing (Richter et al., 2017). Thus, it is evident that social media is important to digital entrepreneurs as far as finding information is concerned. Social media is more valuable to digital entrepreneurs than it is to a non-digital business. This is because an aspect such as information is derived from online

user activity. Generally, opportunities identified from online user activity can only be exploited in a digital space as that is where the opportunity is relevant.

5.3.2. Information

Information is the foundation of digital entrepreneurial endeavours. While information is a type of resource, it is important to make the distinction as information itself has a distinct role in the entrepreneurial process as a source of entrepreneurial opportunities. For instance, searching for information is a common activity and generally one of the first activities done by digital entrepreneurs (Boojihawon & Ngoasong, 2018; Smith et al., 2016). Information having a distinct role is further evidenced by information being in a completely different theme to resources in the findings, which suggests that information and resources are distinguishable in terms of their role in digital entrepreneurship. There is a shared conceptualisation that information is a valuable source of opportunity recognition. For instance, market information provides insights into market segments (Chesbrough, 2006) which serve as business model inputs (Boojihawon & Ngoasong, 2018). From these inputs, business models can be developed which serve a potential market. However, the significance of information extends beyond the initial building blocks of a business. Findings show that information serves as important inputs at many stages of the entrepreneurial process thus making it a central feature. Thus, the process of finding information, more importantly, information sources, is an important activity. Therefore, this study supports the literature in acknowledging information as important to entrepreneurial endeavours.

5.3.3. Industry Access

Industry access is an important consideration in digital entrepreneurship. This is because digital startups aim to disrupt existing industries with digital business

models. Hence, there is a need for access to industry actors and resources. For instance, this study found that having industry-specific access to actors and resources is important for entrepreneurial aspects such as adding value as shown in Appendix 5. This finding was unexpected given that the literature review and extant literature tends to adopt a social network focus that is attributed to entrepreneurial success. For instance, as mentioned in the literature review, social networks are an important part of opportunity development and success in entrepreneurship (Kwon et al., 2013; Wang & Altinay, 2012). However, this finding suggests that social networks alone may not be sufficient to achieve entrepreneurial success. Further work is required to establish the viability of this finding, in particular, how entrepreneurial outcomes differ with and without industry access especially in the case of pioneering digital businesses.

5.3.4. Geopolitical factors

Geopolitical factors is a key concept. Given the fact that digital businesses are able to rapidly grow across many different countries without encountering the barriers faced by traditional ventures, and also that many digital businesses are novel hence legislation may not have yet been established for them, it is important to take into account the geopolitical factors when assessing digital entrepreneurial opportunities. While various levels are mentioned in the corpus as shown by concepts such as global, local, policy, government, national, and power, there is not enough attention paid to geopolitics yet. This macro-level focus is needed considering the borderless and connected nature of digital entrepreneurship. As Appendix 5 shows, geopolitical factors can affect digital entrepreneurship in different ways. For instance, it may hinder digital entrepreneurship due to policies. It may also present entrepreneurial

opportunities, which could be exploited. Therefore, there is abundant room for further progress in conceptualising the geopolitics in digital entrepreneurship.

5.4. Theoretical Contribution

The overall purpose of this dissertation was to bring cohesion to the digital entrepreneurship literature by providing improved understanding and more singular conceptualisations. An automated content analysis was employed using Leximancer, which is a machine-based lexical analysis tool. The data set used for this study was made up of digital entrepreneurship journal articles collected through the Scopus database. In total, a corpus of 576 highly ranked (A*, A and B) journal articles were assembled (according to the ABDC ranking list, 2016). This study makes three theoretical contributions to the digital entrepreneurship literature.

First, this study makes a methodological contribution. The machine-based analysis enabled this study to draw upon an extensive corpus of digital entrepreneurship literature. In so doing, empirical evidence is provided for the common themes, concepts, and shared understandings underpinning the literature based on the meso- and macro-level perspectives. By identifying these common themes and concepts, areas that are neglected are also identified. For instance, this study finds that ecosystems do not command sufficient attention despite ventures existing in ecosystems; therefore, ecosystems have the potential to have a significant impact on ventures. This study demonstrates that the dependence of a venture is not only on the way it operates internally but also its interaction with the external environment. This external environment is a part of the ecosystem. Hence, this study contributes to the literature by identifying the ecosystem as an important aspect of digital entrepreneurship in need of greater attention.

Second, this study contributes to the digital entrepreneurship literature by resolving differences and finding common understandings. In identifying the

common themes and concepts, and the shared understandings thereof, this study brings cohesion to the literature. For instance, it proposes a definition for digital business models based on empirical evidence. Hence, this study provides a theoretical foundation and a better understanding of the research streams in digital entrepreneurship, which could help future research focused on digital entrepreneurship.

Some of the most important constructs that have converged around a shared understanding include digital business models, networks, and innovation. In the case of digital business models, this study highlights the significance of the user and network dimensions. Thus, the main learning point is that digital ventures are not the sole creators of value, but instead, act as co-creators of value along with networks of users.

In relation to networks, this study finds there is a strong reliance on network effects and network structures for digital entrepreneurial success. This is because networks provide valuable resources to digital entrepreneurs, and also create value for digital ventures. Finally, this study finds Service Dominant logic forms the dominant view of innovation in digital entrepreneurship. Hence, the business model is the main focus of innovation. This is because business model innovation is more likely to be beneficial to digital ventures.

Furthermore, this study finds that the business model is the focus over products. This could be attributed to innovation being the main avenue in which startups seek to gain a competitive advantage. So, considering that innovation of service level elements like business models will be more significant to digital ventures due to digital technologies being at the centre of the business models, it explains the focus on business models over products.

Third, the significance of industry access and geopolitical factors are identified. Industry access refers to the need to have access to industry-relevant actors and resources. Geopolitical factors affect digital entrepreneurship due to the borderless and connected nature of digital entrepreneurship. This contributes to the literature by providing empirical evidence for their respective roles in digital entrepreneurship, which have generally not been acknowledged or explicitly stated in the literature. Taking these elements into account at different stages of the digital entrepreneurial process serves as important indicators. For instance, having no industry access means it will be harder to obtain relevant resources. This study highlights the importance of innovation, in terms of business model success, and resources; hence, industry access plays an important role in creating business models as resources serve as valuable inputs. Thus, having industry access means that better business models could be created, which potentially could lead to startup success. By identifying these topics, this study shines a light on macro-level elements that are important to digital entrepreneurship.

5.5. Practical Implications

The findings of this study also generate practical implications that impact managers and entrepreneurs. These implications span across different facets of digital entrepreneurship as will be discussed next.

Knowledge and information help with opportunity recognition and business planning. They serve as important inputs at many stages of the entrepreneurial process thus making them important for digital entrepreneurial success. Therefore, digital entrepreneurs should often engage in knowledge acquisition activities, including the development of formalised processes that ensure knowledge acquisition and development takes place, and engage in information-seeking activities, including the development of processes to identify market responses and

evolving user needs, all of which results in information. Furthermore, given the technological intensive focus of digital entrepreneurship, knowledge is often a by-product of processes such as innovation hence digital entrepreneurs should use these processes to acquire knowledge, which is beyond their primary purpose.

Networks provide valuable resources and support. Digital entrepreneurs should therefore utilise and build networks that are accessible to them throughout the entrepreneurial process. In doing so, it will help them to exploit opportunities and contribute to entrepreneurial success. Furthermore, information synergy is a supporting tool afforded to digital entrepreneurs via networks. Common issues associated with finding information such as asymmetry and overload can be overcome by having access to networks. Information asymmetry refers to valuable information only being accessible to certain actors and platforms. Information overload refers to being exposed to too much information. Networks are able to eliminate or reduce these issues. Finally, digital entrepreneurs should also be cognisant to take a network perspective rather than a dyadic perspective of value creation. This is because digital technologies enable the ability to bring networks of users together to co-create value.

Digital entrepreneurs should network with industry insiders when exploiting an opportunity in a specific industry. This is because industry relevant knowledge and resources from industry insiders will help digital ventures gain a foothold in an industry. For instance, an important aspect such as business models will benefit from these affordances throughout the development process, thus ensuring applicable and viable business models are being developed. Access to social networks may provide valuable resources; however, industry actors are able to provide industry specific knowledge and resources that will further contribute to digital entrepreneurial success and help digital ventures disrupt industries using digital technologies.

Digital business models are able to be turned into a competitive advantage due to digital technologies. This is because digital business model components such as the value creation network can be turned into data sources and the business model can be used to form connections in novel ways. Hence, digital entrepreneurs should take advantage of this by incorporating users into the value proposition to co-create value. However, this does pose potential risks to ventures. For instance, intellectual property could be at risk; therefore, digital entrepreneurs should take appropriate measures to safeguard their ventures and carefully control their platforms to prevent others from capturing most of the value and mitigate risks associated with the incorporation of users. For example, Apple carefully controls the boundaries and ownership of everything in Apple Music and the App Store. Furthermore, business models should be the focus of innovation considering that digital business model innovation is more likely to lead to rapid growth and success due to digital technology. For instance, the innovation of the value proposition would allow digital ventures to differentiate themselves from competitors.

Development approaches are the ways in which startups go about developing and innovating elements of the business. Development approaches should be user-centric. In the case of business models, by involving users and making them the focal point during the development process, digital entrepreneurs can ensure that they are a developing a viable business model that is able to generate network effects. Digital technologies offer flexibility and modularity thus allowing an iterative user-centric development process which allows digital entrepreneurs to change and get their business model right without enduring high costs.

Geopolitical factors should be considered by digital entrepreneurs when exploiting or searching for opportunities. For instance, geopolitical variance in terms of policy could present unique opportunities for all digital ventures. Digital ventures

that span borders may find an opportunity for further expansion into new countries due to favourable policies. However, it could also hinder digital entrepreneurial endeavours. Some countries' policies and regulatory frameworks may restrict digital entrepreneurship activity thus making it unviable to seek expansion. This explains why a thorough macro-level analysis is important and should be part of the digital entrepreneurial process.

5.6. Conclusions

This study set out to identify the common concepts, themes, and understandings that underpin the digital entrepreneurship literature. In doing so, this study provided an improved understanding and more singular conceptualisations of the digital entrepreneurship literature. By conducting a machine-based analysis of the literature using Leximancer, the study was able to draw upon an extensive corpus, which helped in identifying the common concepts and themes. Furthermore, it helped bring cohesion to the digital entrepreneurship literature.

However, this study cannot avoid some limitations. The first limitation is the Leximancer output. The discussion is guided by concepts and themes that dominate the lexicon. Therefore, outliers in the literature do not get attention as they are not prominent. These outliers could be significant areas of interest for digital entrepreneurship and be more cutting edge in terms of improving digital entrepreneurship understanding and making significant contributions to the literature.

Another limitation is perhaps the scope which only allows for a broad understanding of the concepts and themes. While this was enough to satisfy the research objective, a more focused study on specific concepts and themes will do more to develop and improve understanding. For instance, focusing on the network

dimension of digital business models could provide further insight into digital business models.

Therefore, a suggestion for future research will be to adopt these findings as a base understandingof these common concepts and themes but focus on specific concepts and themes to develop them further. In relation to digital business models, future research could focus on successful digital ventures that have incorporated user value co-creation into their business models. More specifically, the research could identify the steps these ventures took to develop the network dimension and incorporate it into the business model.

In terms of networks and industry access, future research could focus on pioneering ventures such as those in the Sharing Economy (e.g., Uber) in identifying the impact, if any, that industry access had on its success outside of network access alone. In particular, future research could evaluate how digital entrepreneurial outcomes differ between having and not having industry access compared to network access. As for geopolitics, future research could focus on “Born Global” digital ventures. In particular, the research could identify how geopolitical factors enable digital ventures to become “Born Global”.

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Appendices

Appendix 1

Theme: *Digital*	**Supporting Texts**
entrepreneurial education	"They specified that motivation will mediate the relationship between personality and entrepreneurial intention, suggesting that education will magnify the motivation–intention linkage. Their empirical findings show that both intrinsic and extrinsic motivation are successful mediators, and education can positively moderate the relationship between extrinsic motivation and cyber entrepreneurial intention." (Yeh et al., 2020, p.36) "Thus, entrepreneurship education is an important issue in the digital era. Entrepreneurship education aims to enable learners and society as a whole to cope with emerging economic and employment challenges through creating an entrepreneurial mind-set and assuming the direct relationship between entrepreneurial intentions, motivation, and attitude." (Wu et al., 2019, p. 2) "The relevance of entrepreneurship education (EE) to foster entrepreneurship culture and activity is widely recognized. Entrepreneurial education provides key skills to identify a winning business. Teaching entrepreneurship has a number of positive effects and benefits. These benefits include the inculcation of thinking as well as collaborative and communication skills that are highly valued by employers." (Vorbach et al., 2019, p. 100) "Clustering and revenue sharing between key actors has also been put forward to support innovation (Ojala, 2016). Active and experiential entrepreneurial education and training focussing on value creation can support the development of potential entrepreneurs' innovation capacity (Bell, 2015)" (Liu & Bell, 2019, p. 17) "Besides, a simple lack of interest to entrepreneurial activity was cited among possible reasons. Thus, it can be concluded that the main reason for the students' lack of readiness for entrepreneurial activity is insufficient education level" (Ustyuzhina et al., 2019, p. 7)

digital activities	"The primary activities of digital entrepreneurship include a number of areas: opportunity assessment decisions, entrepreneurial entry decisions, decisions about exploiting opportunities and exit decisions (Shepherd et al., 2015). Opportunity assessment decisions and exploiting opportunities are two topics that are relevant to the focus of this paper." (Standing & Mattsson, 2016, p. 387) "Important activities for any entrepreneur include functions as diverse as market research, technology development and testing, growing the management team, and building legitimacy with multiple stakeholder groups (Choi & Shep-herd, 2004; Chrisman & McMullan, 2000; Rice, 2002). As a result, the relationships and network connections entrepreneurial firms form with other organizations and partners can serve as pathways through which they can access resources and opportunities (Hite, 2005)." (Srinivasan & Venkatraman, 2017, p. 56) "The ease of doing business on the digital platform became a critical success factor for it. All of its major activities including advertisement, customer onboarding (both project owners and backers), project development, project advertisement, etc. were performed on the online medium only." (Gupta & Bose, 2019, p. 871) "It is the digitized, non-material nature of such goods and services that gives them the potential for high scalability, and thus suits our analysis of the scalability of digital business models. The term 'digital businesses' deliberately incorporates a very wide range of firms and business activities." (Zhang et al., 2015, p.5)

knowledge resources	"This effectual design cycle allows the software development team to grow system artifacts which represent the knowledge base of the team. The team evaluates its aspirations with this knowledge base and identifies new resources." (Hevner & Malgonde, 2019, p. 414) "Specifically, the agents in platform ecosystems can share and use common resources and knowledge, while leveraging unique resources by creating new complementary modules. In this respect, the recent advancements in collecting, analyzing, and interpreting information have boosted the adoption of digital platforms as facilitators of inter-actions and have placed information and network management at the center of many business models (McAfee & Brynjolfsson, 2012; Van Alstyne, Parker, & Choudary, 2016)." (Cenamor et al., 2019, p. 197) "Recent research suggests that the access to knowledge resources influences not only the performance of nascent firms but also – and in particular – the growth and survival of (knowledge-based) start-ups (Dohse and Walter, 2012; Unger et al., 2011). It is commonly understood that knowledge and proper access to it are the most important resources in entrepreneurship that is highly necessary for entrepreneurial initiatives, success and economic sustainability (Widding, 2005)." (Farani et al., 2017, p. 87) "The digital economy observes an increasing number of entrepreneurs participate in the sharing and exchange of information, knowledge, data and physical goods (Botsman & Rogers, 2011). The new generation of Web applications and social networks have facilitated the sharing of common resources, providing structures for new digital platforms and infrastructures that promote swapping, sharing and lending new business models (Bilgram, Brem & Voigt, 2008; Trumm, Kemper, Kern & Naumann, 2013)." (Le Dinh et al., 2018, p. 2)

knowledge process	"The effectuation process plays a huge role in getting potential partners, expanding the knowledge, resource, and network for the consortium; then it helps the identification of quality business opportunities and makes the business model creation stage proceed rather smoothly. Simultaneously, the onboarding of partners helps the consortium gain knowledge of new external enablers, which could then form a strengthening loop to further expand the network, shaping the identity of the consortium." (Xu & Koivumäki, 2019, p. 313) "These heterogeneous advances in digital access may significantly alter the process through which firms obtain and integrate external knowledge through informal sources. Local advances in digital technologies may obviate the need for interpersonal relationships to transfer knowledge." (Boeker et al., 2019, p. 4) "Accordingly, receiving heterogeneous knowledge from diverse sources in a structured way facilitates the innovation process that subsequently ensures the evolvability of the value proposition and the long-term success of the firm (Wareham et al., 2014)." (Cenamor et al., 2019, p. 198) "Knowledge is a not an accumulated stock of information but a structure of connections, and these connections change as knowledge grows in the brand-building process. Adjustments in people's classicatory schemes (knowledge structures) affect the uses to which existing brands are put in the short run and affect the kinds of brands that are created and scrapped in the longer run." (Harper & Endres, 2017, p. 1077)

digital capital	"As such, a key source of developing those resources required for scale-up and growth is access to venture capital funding. While relationships with venture capital firms provide the necessary financial resources to succeed in dynamic platform settings, they also provide the advantage of increased legitimacy for the digital entrepreneur in a hyper-competitive environment allowing them to attract better talent and make their offerings more attractive for the end customer." (Srinivasan & Venkatraman, 2017, p. 57) "Ventures may thus benefit from the infrastructure provided by crowdfunding platforms, enhance their social capital, and use it as a basis for the involvement of market participants (Nambisan, 2017). Social media functionalities render it easy for backers to exchange information among themselves and with the venture (Butticè et al., 2017)." (Eiteneyer et al., 2019, p. 3) "In sum, the founder team composition and the intellectual and social capital gained from prior industry-specific work experience are important predictors for the pace of iterations in the lean start-up of any new venture. Shipstra provides an excellent example of how to achieve market traction by building a business model envisioned for digital disruption in a traditional marketplace." (Giraldo-Diaz & Fuerst, 2019, p. 16) "First, we note that the relative density and diversity of cities constitutes a critical enabling condition for digital entrepreneurship. Access to venture capital and skilled labor makes it possible to build competencies in those settings were skill renewal is critical." (Geissinger et al., 2019, p. 884)
networks	"Network capability is a dynamic capability that creates inter-dependencies both within and outside the organization (Battistella et al., 2017). The literature shows that network capability allows firms to gain access to different resources, identify opportunities, and respond quickly to fast-changing market needs (Gulati, Nohria, & Zaheer, 2000; Solano Acosta, Herrero Crespo, & Collado Agudo, 2018)." (Cenamor et al., 2019, p.198) "Entrepreneurial ventures with strong ties quickly realize that a dense backer network allows the transfer of information. This may unlock knowledge residing in several target groups that might have been hidden from the venture's perspective." (Eiteneyer et al., 2019, p. 4)

"However, our study's findings indicate that for the majority of founders their arrangement cognitions were not holding them back from asking for advice or other entrepreneurial resources from their digital networks; founders repeatedly reinforced the notion that they were aware that contacts within their online networks held resources that were of potential value to their firms. Most also mentioned that there was significant overlap between their online and face-to-face networks, refuting the premise that digital networks comprise "different" connection types." (Smith & Smith, 2019, p. 11)

"When entrepreneurs face a set of choices such as on which digital platforms to launch their new components, what components to launch and when to launch them, their *guanxi* networks can provide them with access to an abundance of knowledge resources, for which knowledge orchestration is critical if the right decisions are to be made (Srinivasan and Venkatraman, 2018)." (Liu et al., 2018, p. 313)

Appendix 2

Theme: ***Business***	**Supporting Texts**
approaches	"The ability to react to customer feedback and adapt (or pivot) business models as required is highlighted in the lean start-up literature. This approach favours experimentation based on customer feedback and iterative design leading to frequent adaptations in search of a repeatable and scalable business model (Blank, 2013)." (Liu, & Bell, 2019, p. 518) "Another approach is to incorporate these societal demands to re-think the business model of firms so that trade-offs can potentially become new business strategies. Developing innovative ways of doing business that align profit and sustainability is a key challenge for corporate managers and business strategists in the twenty-first century." (Alberti & Varon Garrido, 2017, p. 3) "Causation is defined as an approach where a business model is seen as a method for planning, communicating, and mapping for future operations (Duin and van der, 2006). Effectuation refers to a trial-and-error iteration to make something work in a non-predictive environment." (Xu & Koivumäki, 2019, p. 307) "Thus, more broadly, digital platforms and open innovation approaches appear to be lowering entry barriers, creating more venues for raising capital, and allowing entrepreneurs to apportion the risks associated with venturing in different ways. However, our understanding of the specific ways or mechanisms of risk reduction and their impact on the rate (and success) of venturing remains limited and indicate avenues for future research." (Nambisan et al., 2018, p. 360)

models technology	"Digital technologies support the new phenomenon of generativity (the ability of technology to support the creation of new products, Wikipedia, 2018) whereby individuals, groups and organizations co-create services, applications, and content. This creates opportunities for radically new business models, and new opportunities are continuously triggered by new forms of social infrastructure (Tilson et al., 2010)." (Rippa & Secundo, 2019, p. 901) "Digital technology is a business transformation enabler: a means for achieving strategic and powerful ends of digital transformation, not an end of digital transformation itself. Conversely, a business model is a digital transformation driver: a factor that causes transformation to succeed or not." (Tekic & Koroteev, 2019, p. 685) "Digitalization has been the driver of economic change, with ups and downs in all industries, since the end of the last century. The development of new options in information technology allowed newcomers to challenge existing value chains with innovative and often disruptive business models." (König et al., 2019, p. 844)
innovation process	"Despite being commonly envisioned as a linear process from idea generation to implementation, the innovation process tends to be nonlinear and characterized by frequent feedback loops. Many ideas are abandoned or revised during implementation, and the implementation phase is an important source of new ideas." (Kristinsson et al., 2016, p. 465) "Indeed, the customers' active involvement in providing feedback on the product encouraged innovation of the product through the rapid iteration process. This was reflected in the comment: You need to involve them with the update of your products." (Liu & Bell, 2019, p. 522) "Traditionally, innovation theory has suggested a stepwise, and gradual approach to new service development before the final launch is made (Blank,2013). In the digital environment conditions are more demanding requiring greater experimentation (McGrath, 2011)." (Standing & Mattsson, 2016, p. 397) "Therefore, enterprises are actively cooperating with the external environment in order to achieve global innovation performances that can enhance their value creation and productivity as well. In line with this, innovation process is greatly focused on users\-

	consumers.” (Scuotto et al., 2016, p. 420)
technology development	“Technology entrepreneurship in this regard is ventures in which development of technological innovation constitutes a core part of opportunity recognition, resource assembly, strategizing, and appropriation.” (Ernkvist, 2015, p. 288) “New technologies offer the prospect for new market entrants to refashion the industry. Just as Amazon refashioned the book-selling industry and is now focused on transforming the retail food industry, digital opportunities in agriculture may offer the way for a new entrant to carve out or create a whole new system of development.” (Phillips et al., 2019, p. 8) “Besides the proliferation of new partnerships, advances in digital technology have facilitated the development of novel networking strategies to develop agility, in turn to engage customized demand efficiently and rapidly. Heterarchically organized networks of firms are open to enable the constant culling of dispersed information and knowledges from across a population of firms.” (Ettlinger, 2017, p. 65)

platform development	"A number of technologies have served as building blocks for the development of the digital platform business model. One of the most important technologies behind the platform business, the API, enables the controlled sharing of processes and data with third parties. " (Mancha et al., 2018, p. 57) "Scholars have noted that platform owners can employ various open innovation strategies to become platform leaders or enhance the platform leadership positions they already have (Gawer & Cusumano, 2002; Iansiti & Levien, 2004; West, 2003). For example, Nokia used open mobile architecture in building its alliance network (Dittrich & Duysters, 2007), Deutsche Telekom decided to open its API services to provide software developers an opportunity to integrate their innovative applications and mashups (Rohrbeck et al., 2009)" (Eckhardt et al., 2018, p. 371) "As resources to the software development project, the effectual model considers three key, independent components: Means for the project manager and development team are the existing resources that are available to them. Means consist of technology and skills (programming language, API's, tools), market knowledge (customer orientation, seasonal trends, patterns from archival data), platform knowledge (connection interface, tools and technology, best practices, available API's on the platform), control mechanisms (scope boundaries, stakeholder feedback), the social capital that the development team can draw upon, and team's culture which may provide routines and communication channels." (Hevner & Malgonde, 2019, p. 412)
platform value	"An important feature of most multisided platforms is that the value to customers on one side of a platform typically increases with the number of participating customers on the other side. This is known as the presence of indirect network effects." (Sussan & Acs, 2017, p. 67) "A platform may find that through existing or new partnerships, new value propositions can be developed and new sources of revenue can be generated. Customer acquisition and retention strategies are particularly important for SME social media platforms because the platform's ability to attract and retain SMEs has a direct influence on its overall ability to grow and generate sales via the platform." (Holland & Gutiérrez-Leefmans, 2018, p. 171)

"The platform literature reports a shift in the value proposition from internal organizational boundaries toward network value (McIntyre & Srinivasan, 2017; Thomas et al., 2014). This finding adds to the platform literature by showing that the interdependencies of digital platform capability may induce enhancements in the ability to manage networks." (Cenamor et al., 2019, p. 202)

"Open-innovation platform ecosystems are often used to enhance the value of platform technologies (Gawer & Cusumano, 2014), ranging from mobile phones to sophisticated computer-aided design systems like SolidWorks. In our context, platform companies provide the necessary boundary resources (such as soft-ware development kits) to complementors (the mobile app developers) but leave decisions, such as which app to develop and what to commercialize, up to developers (Ghazawneh & Henfridsson, 2013)." (Eckhardt et al., 2018, p. 370)

Appendix 3

Theme: ***Social***	**Supporting Texts**
social practices	"Readers' already complicated relationships with money and with their desire to see financial rewards come from "right livelihood" rather than from network-ing and marketing practices further complicate the path to self-employment and to the development of a personal brand. Still readers often feel they have no choice but to engage with the Internet if they are to stay relevant and connected to ongoing conversations and if they are to develop or maintain a 'good reputation'." (Gregory, 2018, p. 221) "This evolution has led to civil society appropriating an expanding entrepreneurial spirit, thus generating different results through the use new practices based on mechanisms of co-design and co-creation, key characteristics of social innovation. The latter has generated, among others, participatory enterprises such as cooperatives and other entities of the social economy." (Zebryte & Jorquera, 2017, p. 868)
social media	"The concept of crowdfunding means that you can reach across the globe within seconds, thanks to social media and engage people that are willing to give you money or willing to back you or willing to take that chance in order to make things happen." (Ingram Bogusz et al., 2018, p. 325) "Company blogs and social media enable start-ups to dialogue with their customers in a cost-efficient manner. Personal interaction should be an integral part of start-ups' business models." (Kuester et al., 2018, p. 75) "The use of social media serves the aim of engineering the construction of a reputation through the use of personal branding techniques. This enables new forms of managerially steered sociality that are based upon the fact that digital technologies and social media allow reputation to become tangible via a number of different – and more or less reliable – indicators, rendering it the most important asset for the individual brand." (Gandini, 2016, p. 125) "Visibility and self-branding share an intimate relationship in the realm of social media (Marwick, 2013). Self-branding demands feedback as individuals seek to construct an ideal self that is both authentic and entrepreneurial (Banet-Weiser, 2012)." (Cotter, 2018, p. 897)

Appendix 4

Theme: ***Services***	**Supporting Texts**
market products	"Tech startup entrepreneurs have to conduct customer surveys to test the performance of their products before launching them in the market. Based on the outcomes of such surveys, entrepreneurs can envision the public pulse on tech-based features in their products that not only intended to incorporate in their future commercial version of products but also to decide whether to go for large-scale production or not." (Muramalla & Al-Hazza, 2019, p. 362) "A market may not exist for the product, or the prevailing price in the marketplace may not sufficiently compensate producers for the costs of bringing the product to market. One indication of the potential demand for a new product is the demand for similar commercial products that already exist." (Eckhardt et al., 2018, p. 375) "Entrepreneurs must always focus on questions about the available products or services and how to generate income and offset costs. These questions allow them to identify the opportunities to meet the market demand. " (Le Dinh et al., 2018, p. 10)
service users	"Free users should be treated as a valuable resource and as a marketing tool rather than as operational costs (O'Malley, 2015). They are helpful in testing and ideating the freemium portfolio and provide invaluable feedback when it comes to product usability and features" (Holm & Günzel-Jensen, 2017, p. 20) "Platform businesses are orchestrators of business ecosystems. Digital platform business models are the product of technological innovations, openness to a business ecosystem, and incentives and rules to attract participants to use those services, regulate their behavior, and gather their data as they partake in the platform." (Mancha et al., 2018, p. 55) "For platform businesses, accumulation of users is critical for generating quality matches and value creation/appropriation. For platforms that get it right, positive feedback effects will self-reinforce growth of platform users and value." (Song, 2019, p. 579)

Appendix 5

Theme: ***Industry***	**Supporting Texts**
industry access	"During the programme, value adding is provided through close mentoring and access to industry partner networks. After tight interaction during this period at the site of the seed accelerator, where the investees' teams share o ces and undergo intensive training and mentorship sessions, the seed accelerator only relates to the company as a regular shareholder and the investees relocate back to their initial locations." (Kuebart, 2019, p. 2217) "As in all cultural industries, the key players in the music industry leverage huge catalogues of rights to build and sustain their competitive advantage. Rents associated to their exploitations are maximized by controlling the access to a limited number of distribution channels, which in turn contribute to an increase in the value of rights." (Raviola & Dubini, 2008, p. 104) "Microsoft BizSpark is a global programme that helps soft-ware startups succeed by giving them access to software development tools, connecting them with key industry players, and providing marketing visibility. The programme also includes access to Windows Azure, a flexible, comprehensive, and powerful cloud platform for the creation of web applications and services." (Pinto & Baracsi, 2012, p. 190) "Informational diversity refers to differences in education, functional background and industry experience. Teams with higher levels of informational diversity benefit from access to a larger pool of knowledge, expertise, contacts and industry experience, than teams with lower levels of informational diversity." (Kristinsson et al., 2016, p. 466)

local policy	"The overall analysis of the projects suggested that the emerging social problems can be of different types (e.g. hidden, small, narrow or domain focused) and can occur in specific locations where the policies of local governments might not be taken into consideration. This can specifically occur because of the dynamic nature of organizations as well as the complexity of the analyzed projects." (Battisti, 2019, p. 148) "As discussed, the cross-border free flow of information enables international trade which can lead to increased innovation, productivity and economic growth. The United States sup-ports the free flow of information across borders as a means of stimulating economic growth and has expressed concern about the use by other governments of arbitrary Internet restrictions that discriminate against foreign businesses for the benefit of local businesses." (Meltzer, 2015, p. 96) "The implications of the digital divide extend beyond economic policy to include issues and opportunities for firms. In particular, firms based in countries that are on the less developed side of the digital divide may find it increasingly difficult to be competitive not only in global e-business markets, which are characterized by worldwide competition between the global networks of multinational firms, but also in multidomestic and local markets that were previously shielded from foreign competition." (Gregorio et al., 2005, p. 155)
global policy	"Most technological advancements in Internet-related technologies and e-business have originated in industrialized nations and have initially been targeted at customers in the same set of countries. According to our own calculations based on data from the World Bank [57] and eMarketer [14]), high-income nations accounted for more than 80% of Internet users and more than 90% of global e-commerce in 2001." (Gregorio et al., 2005, p. 156) "The rapid acceleration of digital technologies in the past 10years has had a global impact on markets and society (Nambisan et al., 2017). Digital technologies, such as social media, mobile, business analytics, the Internet of Things, big data, advanced manufacturing, 3D printing, cloud and cyber-solutions, MOOCs, and artificial intelligence, are creating further opportunities for researchers, entrepreneurs and policy makers." (Rippa & Secundo, 2019, p. 900)

Appendix 6

Themes: ***Students,***	**Supporting Texts**
students education	"The E-Business and E-Commerce module is designed for graduate programs in information Systems (IS) and information management (IM) and attempts to incorporate both learning about and learning for e-commerce into its curriculum. Two observations of how business has been conducted in the knowledge-based economy inform the design of the E-Business and E-Commerce module." (Foster & Lin, 2003, p. 465)

Appendix 7

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