

Article

Decoding Business Potential for Digital Sustainable Entrepreneurship: What Romanian Entrepreneurs Think and Do for the Future

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Abstract: The digital environment and the businesses can no longer exist separately; the way in which entrepreneurs adapt to digital environments determines the future of the companies. By aiming to understand Romanian entrepreneurs' openness and the assets disposed for digitalisation, the authors performed a study which revealed different managerial approaches used in order to achieve digital entrepreneurial sustainability. With exploratory research, they (i) identified the strategic approaches of the businesses within the digital environment, (ii) analysed the importance of strategic objectives and the entrepreneurial vision, (iii) understood the long-term strategies and the costs of digitalisation, and (iv) analysed the future of the business in terms of cyber security. The study highlighted that no Romanian entrepreneur placed digitalisation as an independent objective for its company, showing that companies needed a proper digitalisation strategy correlated to the opportunities and threats of the business environment. Moreover, the Romanian entrepreneurs' knowledge in cyber security was low even though they were aware that it was imperative to control critical information and develop data security strategy so as to avoid data theft/loss in the company. All the findings favoured conceptualising a new Digital Sustainable Entrepreneurship Model based on owners' entrepreneurial visions and companies' strategic objectives alike, a guide-framework to remain competitive in a sustainable, ever-growing market.

Keywords: digital sustainable entrepreneurship; digital transformation; digital strategy; entrepreneurial vision; digitalisation



Citation: Nicolau, C.; Nichifor, E.; Munteanu, D.; Bărbulescu, O. Decoding Business Potential for Digital Sustainable Entrepreneurship: What Romanian Entrepreneurs Think and Do for the Future. *Sustainability* **2022**, *14*, 13636. <https://doi.org/10.3390/su142013636>

Academic Editor: Fernando Almeida

Received: 22 September 2022

Accepted: 16 October 2022

Published: 21 October 2022

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1. Introduction

These days, a strong connection between business and the art of digital sustainable entrepreneurship has arisen [1]. Identifying key-factors and deploying strategies for a transition to digital entrepreneurship brings real advantages in terms of surveillance on a highly competitive, ever-growing market [2,3]. Whether a company has a digital portfolio of products and services or not, it must take actions to operate by using digital media to position itself on the consumer perceptual map [4]. Hence, in business, there has emerged the requirement for a sustainable business environment [5–7] as an effect of the co-existence of four very different generations of entrepreneurs: baby boomers, Generation X (millennials), Generation Y, and the centenarian generation, called post-millennial or Z [8]. Under such circumstances, from baby-boomers to a developing generation, the Alpha one [9], the social diversity is a real challenge for entrepreneurship [10,11], and so are digitalisation and sustainability [12,13].

By advocating for the digital and sustainable changes as voiced by Gen Z and Millennials [14] and by expressing their concerns for the world around, generations of consumers have refined their highly demanding needs, making entrepreneurs adapt and work hard to remain competitive, even if it is, for example, about basic digital transformation or the

implementation of more complex actions related to cyber security. These days, digitalisation refers to more than the adoption or increased use of digital technologies such as cloud computing, artificial intelligence, 3D printing, or mobile computing by governments, industries, or organisations [15].

Recent progress shows that digital transformation represents a great force driving innovation and sustainable growth alike [16]. Through transformation (the core of change management), businesses are able to respond to all the customers' needs, irrespective of their age or the business environment where they interact. Thus, the generational approach is a significant aspect of digital transformation, as not all the generations (especially baby boomers, who were less exposed to digitalisation [17]) are able these days to smoothly and actively contribute to the needed organisational shift towards big data, business analytics, cloud computing, mobility, and social media platforms, which define digital transformation [18].

Recent studies show the concern for studying generations from this point of view and exhibit extremely important aspects for the future of the companies. For example, sustainable digital entrepreneurship could be strategically approached by analysing the similarities and differences in the consumer behaviour of specific generations and the business strategies particularly customized for them. Incentives such as quality, availability and convenience [19] must represent key-factors for satisfying customers in the digital sustainable world and the entrepreneurial vision cannot be far from them [20].

Certainly, working with digital media in business is necessary, but the level of digitalisation might represent a barrier in deploying several actions if some aspects are not grounded. In this regard, the digital shortcomings may represent excuses for non-performing companies [21,22], but the real demands of consumers have ended up fragmenting the market more and more and not forgiving major mistakes [23]. The digital sustainable entrepreneurship is not fulfilled with ad watchers or slow loading pages, but it understands the people from every generation and treats their needs as best as possible [24,25].

As a strategy to reach sustainability [26], digital transformation is not a universally valid process due to the entrepreneurial vision and the key-factors which define the business potential. Only with their correlation might the digital transformation process be performed. Hence, the managers' cognition of the sustainable opportunities lays centrally within digital sustainable models [27].

In this context, the authors aimed to decode the potential vision for a digital sustainable entrepreneurship by analysing what assets entrepreneurs have, and how they approach the digital transformation in terms of what they think and do. Their motivation to design such a study started from the concern about the digital business environment, where digitalisation within businesses occurs by addressing strategic objectives, implementing proper strategies, and using financial resources as an effect of their cyber security awareness.

Motivated by the existing need to address this topic in literature, the authors formulated four statements as research objectives:

- (O1) Identifying the strategic approaches of the businesses within the digital business environment.
- (O2) Analysing the importance and pace of digitalisation within businesses' strategic objectives and their entrepreneurs' visions.
- (O3) Determining the long-term strategies and the costs of digitalisation.
- (O4) Highlighting the future of business digitalisation: cyber security.

The most important results unveiled that no entrepreneur placed the digitalisation as an independent objective of its company, showing that companies needed a proper digitalisation strategy correlated with the opportunities and threats of the business environment. Hence, the results are presented sequentially according to the proposed objectives and strongly related with the other sections. This article contains six sections, and it starts with the background of the topic, the introduction. It is followed by the literature review and the materials and methods used to conduct the analysis. The results show the outcomes of

the study, as highlighted in the discussion section in relation with the previous studies. In the end, the authors present their conclusions and underline the scientific novelty of the paper, theoretical and managerial implications, the limitations and further research.

2. Literature Review

In business, the interactions among external and internal environments makes organisations design strategies aimed at keeping up with the newest trends on the market while focusing on their economic objectives. Hence, literature in the field of business strategic thinking draws attention to the digitalised business environments, presented as being dominated by the necessity to own assets that allow facile access to consumers obtained with strategic approaches. A digitalised environment speeds up the acceleration of the digitalisation within businesses by addressing strategic objectives and the entrepreneurial vision, the cost of digitalisation, and cyber security; the constitutive parts are presented in Figure 1 below.

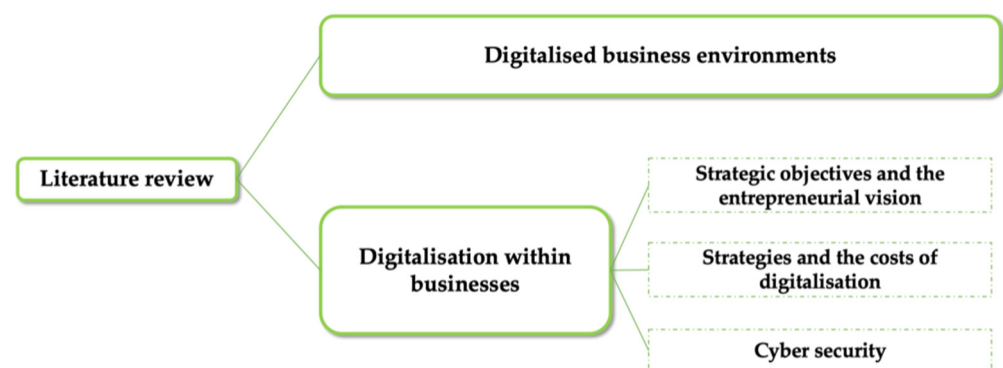


Figure 1. Literature review framework.

2.1. Digitalised Business Environments

The digital sustainable entrepreneurship gains more and more attention, representing the opportunity to integrate digital solutions that enable entrepreneurs to create and deploy new methods to obtain customers. Thereby, they enhance the quality of life by substantially reducing social and environmental impacts [28,29]. Additionally, the adoption of sustainable entrepreneurship embeds the availability to embrace digital media, which can ‘facilitate the effects on consumer behaviour’ [30].

The use of software, applications, platforms, databases, websites, blogs, social media networks, virtual and augmented reality, chatbots or block chain in business means that it has important assets to carry out a digital activity [31–33]. From the simplest forms to the most complex, the informational assets change processes [34], facilitate trade transactions [35] or increase the effectiveness of marketing activities in different fields [36].

In addition, a recent study demonstrated that digital transformation is relevant for business internationalisation [37]. Additionally, the technology readiness for digital transformation and technological market expansion are mentioned in the literature [38], highlighting the international impact of digital businesses. With digital activities undertaken within organisational activities, companies create social and environmental value, hence they perform digital sustainable activities as defined in the specialty literature [39].

2.2. Digitalisation within Businesses

Digitalisation within businesses supposes the initiation of new processes within the business model [40], which means that all the strategic objectives and specific actions of a business should be aligned to a different entrepreneurial vision. From the desire for organic growth in the context of economic growth to the most difficult and hard times, such as the pandemic context [41], or geo-political crisis implications [42], the entrepreneurs show the need to update their leading vision to the requirements of current technology. In our

view, the significant role within the entrepreneurial orientation towards digitalisation is played by the business' strategic objectives, its specific actions for digitalisation and the subsequent costs, and last but not least, its approach to cyber security.

2.2.1. Strategic Objectives and the Entrepreneurial Visions Focusing on Digitalisation

Innovation and growth are inherent to sustainability [43], especially for the economic aspects which support it [44]. Recent global studies highlight digital transformation as the generator of innovation and productivity of companies [16,33,45]. From SMEs to global enterprises, digitalisation is perceived as having a major impact on the development of new business models and consumer experiences [46,47]. Doubtlessly, the field of activity, the company's objectives, the resources, and the vision of the entrepreneurs influence the digitalisation process in all its aspects. However, what is common for any small or large company is represented by its potential to grow, supported by the suitable actions to increase the level of digitalisation.

The success of a business in today's world is closely related to the way in which a digital transformation process is designed and implemented. For this purpose, the literature presents a series of relevant models that centre on the overall business strategy [48,49]. Furthermore, in the context of Industry 4.0, adapting to an organisational mind-set which places digital transformation as a strategic objective of the business [50] might represent a significant method to demystify the potential of business growth. The capacity of designing and implementing new approaches to attract the customer, irrespective of the digitalisation level of the sold product, represents a competitive advantage [51], and it outlines the sustainability of the business going forward [52]. Equally, the path to success is the entrepreneurial vision inclined towards the adaptation of some new ways to deploy digital technologies in an ever-growing and changing market, as a whole, no matter its cycles. The 21st century reveals the necessary qualities of the business owner in terms of successful digital entrepreneurship marked by the digitalised leadership needed to remain competitive [53]. The entrepreneur's mind-set focused on digitalisation plays an important role in increasing the level of innovation of the company and of the ability to offer new products and services adapted to the target audience [54]. To achieve this performance, entrepreneurs must be open and understand the digital world, a complex world full of buyers who have become stronger than ever. By accessing information directly from home, from the car or from work, via a diversity of channels (Facebook, Instagram, Google, Pinterest, etc.), the over 5 billion Internet users [55] challenge the business environment to develop digital leadership and reactive business models [56] so necessary in every company.

Moreover, to demonstrate resilience and sustainable growth, long-term plans for digital technology are necessary [57–60] despite the rapid acceleration of the digitalisation process that we currently live in [61].

2.2.2. Strategies and the Costs of Digitalisation

When researching digitalisation, the literature shows a main focus on the cost-related strategies. The entrepreneurial approach envisages an assessment of the financial resources spent already or to be spent in the future on digitalisation. The year 2022 brings to light new perspectives and findings regarding the digitalisation costs at an international level. For example, these costs are presented in relation with profitability and business structure changes [62]. The evidence from Chinese manufacturing listed companies shows that enterprises have significantly increased the investment in innovation activities for digital transformation processes [63].

On the other hand, many studies raise the issue of the high cost of digitalisation, presenting it as the main barrier for business digitalisation. This indicator 'hinders the scales of digitalisation', which limits the business growth [64]. Another study regarding SMEs from the UK shows that a possible option for digitalisation is to adopt low-cost

technologies and processes [65] and low-cost devices and software are available for non-industrial field such as sensors, Wi-Fi systems, etc.

Even though the literature mentions the perception of digitalisation as being expensive, some studies highlight the role of cost–benefit analysis to better understand the impact of digitalisation processes deployed within businesses [66,67]. An uncommon perspective places the digitalisation as a stimulus for corporate social responsibility. It involves the non-economic aspects of digitalization with ‘positive effects over society’ [64]. In the same register, the advantages of implementing digitalisation processes with lower program implementation costs are proposed [68]. However, due to the multitude of influential factors, research is still needed [69,70].

2.2.3. Cyber Security

Digital transformation creates the appropriate environment for business growth, where sustainability, cyber security and data protection are its pillars. The acceleration of digital transformation impacted the cyber security field [71] and as a consequence, for some businesses, the organisational structure was changed [72,73]. Additionally, in the light of digital transformation as a priority for the European Union, cyber security obtained an important place in the research of the two intersected fields [74]. Hence, cyber-attacks, protecting employees’ accounts, and firms’ digital assets have become topics of interest to academia [75,76].

In addition, due to the use of the Internet in all fields of activity, cyber security is an extremely popular topic in terms of national and international security [77]. Overall, 80% of firms recently reported cyber-attacks [78], which means that the digitalisation of business processes must be accompanied by the availability of entrepreneurs to understand, accept, and deploy protection solutions. The challenge is huge, and the literature presents it in relation with digital assets as the dark side of digitalisation [79].

The pandemic context has accentuated this issue even more. The average daily number of attacks blocked by Kaspersky antivirus software increased by 25%, and significant fraudulent activity was found for predatory apps [80], so the cyber security awareness at the businesses level has become a must.

3. Materials and Methods

3.1. Research Localization and Importance

Digital sustainable entrepreneurship implies the corroboration of social, environmental and financial objectives and its implementation in digital products, platforms or ecosystems so as to create sustainable value [81]. It is the premise of this exploratory study. Moreover, the importance of this research is given by the fact that it analyses the role of digitalisation, including its responses to cyber risks, within entrepreneurs’ visions and strategic approaches.

Romania is a very particular country, with a specific entrepreneurial ecosystem [82] featuring the increase of innovative capital. However, innovation comes with costs and the challenge for Romanian entrepreneurs is to find out the appropriate strategies to digitalise while reducing costs and staying competitive in the market. Statistical data [83] clearly shows that the Romanian policies focus on the following constitutive parts of digitalisation: (i) e-commerce; (ii) Internet connectivity; (iii) e-business and (iv) ICT security. Every indicator presented in Table 1 below is represented by its specific economic indicators which permit the deep-analysis of Romanian businesses’ digitalisation. This country follows the European Union’s pattern which is continuously slowly increasing, highlighting the importance of digitalisation within both the European and Romanian business environments.

Table 1. Indicators reflecting business digitalization in EU and Romania.

Indicator	2017	2019	2021
E-commerce			
E-commerce sales (enterprises with e-commerce sales of at least 1% turnover) in EU	18%	18%	19%
of which, in Romania	8%	12%	12%
Value of e-commerce sales (enterprises' total turnover from e-commerce sales) in EU	17%	18%	20%
of which, in Romania	8%	7%	9%
Obstacles in web sales (enterprises registering difficulties in web sales to other EU countries) in EU	2%	2%	2%
of which, in Romania	n/a	2%	2%
E-commerce purchases (enterprises purchasing online) in EU	46%	n/a	n/a
of which, in Romania	12%	n/a	n/a
Internet connectivity			
Internet access (enterprises where persons employed have access to Internet) in EU	97%	97%	98%
of which, in Romania	85%	82%	91%
Use of computers and of the Internet by employees (total employment using computers with access to www) in EU	51%	55%	58%
of which, in Romania	32%	31%	38%
Type of connections to the Internet (enterprises using DSL or other fixed broadband connections) in EU	93%	92%	94%
of which, in Romania	80%	83%	90%
Use of mobile connections to the Internet (enterprises providing persons employed with mobile devices) in EU	n/a	68%	72%
of which, in Romania	n/a	58%	72%
Use of mobile connections to the Internet by employees (persons employed provided with a portable device for business purpose) in EU	n/a	28%	32%
of which, in Romania	n/a	18%	24%
Website and use of social networks			
Website and functionalities (enterprises with a website) in EU	77%	78%	78%
of which, in Romania	45%	47%	51%
Social media use by time, Internet advertising (enterprises using blogs and microblogs) in EU	14%	13%	11%
of which, in Romania	5%	4%	6%
Social media use by purpose (enterprises developing their image or market products) in EU	40%	45%	n/a
of which, in Romania	28%	28%	n/a
E-business			
Integration of internal processes (enterprises having ERP software package) in EU	34%	34%	38%
of which, in Romania	22%	23%	17%
Integration with customers/suppliers, supply chain management (enterprises sending e-invoices, suitable for automated processing) in EU	n/a	n/a	n/a
of which, in Romania	n/a	n/a	n/a
Cloud computing services (enterprises which buy cloud computing services used over the Internet) in EU	n/a	n/a	41%
of which, in Romania	16%	n/a	14%
Big data analysis (enterprises analysing big data internally from any data source) in EU	n/a	n/a	n/a
of which, in Romania	n/a	n/a	n/a
3D printing and robotics (enterprises using 3D printing) in EU	n/a	n/a	n/a
of which, in Romania	n/a	n/a	n/a
Internet of things (enterprises using IoT) in EU	n/a	n/a	29%
of which, in Romania	n/a	n/a	11%
Artificial intelligence (enterprises using at least one of the AI technologies) in EU	n/a	n/a	8%
of which, in Romania	n/a	n/a	1%

Table 1. *Cont.*

Indicator	2017	2019	2021
ICT security			
Security policy: measures, risks and staff awareness (enterprises which use ICT security measures) in EU	n/a	77%	n/a
of which, in Romania	n/a	53%	n/a
Security incidents and consequences (enterprises which experienced at least once problems due to ICT security incident) in EU	n/a	9%	n/a
Romania	n/a	9%	n/a

3.2. Research Population

This study analyses Romanian businesses. According to Table 2 [84] below, from 2019 to 2020, their number has increased by 20.2% whereas the average number of employees decreased by 2,51%, and the turnover by 0.57%. Under such circumstances, the Romanian business digitalisation continued and registered positive figures.

Table 2. Descriptive statistics of Romanian businesses.

Indicator	2019	2020
Total number of Romanian enterprises	591,397	624,332
Average number of employees with Romanian enterprises	4,347,891	4,238,728
Turnover of Romanian enterprises	LEI 1,813,845 mil.	LEI 1,803,522 mil.

In this total number, service companies, of which we formed our sample, represented 47.83% in 2019 and 48.24% in 2020, according to data in Table 3 [84]. We observe that the increasing national trend was followed; from 2019 to 2020, the number of service companies increased by 6.48%, but it was a low increase compared to that registered by all the Romanian companies and mentioned above, showing the stability of service fields even in turbulent times.

Table 3. Descriptive statistics of Romanian businesses in the field of service.

Number of Service Enterprises Operating in:	2019	2020
Transportation and warehousing	54,256	58,050
Hospitality	27,619	29,119
Information and communication	26,782	29,226
Financial services and insurance	8,300	8,316
Real estate services	18,672	19,809
Professional, scientific and professional activities	69,521	73,454
Management and support activities	23,954	25,231
Education	7,178	7,940
Health and social services	18,589	20,494
Cultural and recreational services	11,145	11,294
Other services	16,840	18,265
TOTAL	282,856	301,198

3.3. Research Methodology

Hence, the methodology of conducting the research implied data collection with a research instrument designed as a semi-structured interview which included four themes:

- (i) Digital transformation as a central engine for business innovation and growth;
- (ii) ICT assets used in business to increase the company's sustainability;
- (iii) Digitalisation costs and strategies to digitalise;
- (iv) Securing business digitalisation.

The authors performed a qualitative analysis based on content analysis [85] among Romanian entrepreneurs from different service fields and different generations. By intend-

ing to understand their attitude and the resources at their disposal for digitalisation, the research design presented some key-points, namely, the level of the business digitalisation, entrepreneur's leadership style, and future intentions regarding digital transformation, determining the attitude towards informational assets for the business, quantifying the costs of digitalisation, and identifying the level of entrepreneurs' awareness regarding the cyber security for the business.

Data were collected by interviewing Romanian entrepreneurs between July–August 2022, every discussion lasting for 60 min. Participants were introduced in the sample by cluster sampling (only companies in the service economic sector), which offered the advantage that it has 'moderate usage, moderate cost, internal and external validity is high, it is simple to draw and easy to verify' [86] and their number resulted when the sample reached saturation. The sample presented in Table 4 below consisted of 12 entrepreneurs who were both the owners and the managers of the companies they referred to in the interviews, of which 50% were male. The average age of the sample was 45.08 years old (45.33 years for women and 44.83 years for men). The main fields of activity which the companies they represented were operating were, in relative frequencies: hospitality (12.5%), distribution and retail (12.5%), training (12.5%), human health (12.5%), translations (6.25%), business consulting (18.75%), accounting (6.25%) and engineering services (6.25%), with some companies having more than one major activity. In terms of generations, Generation Z entrepreneurs represent 8.3%, Generation Y 25%, Generation X 50% and baby boomers 16.7%.

Table 4. Descriptive statistics of the sample.

Characteristic	Sample (n = 12)
Status and position	
business owner	100%
business manager	100%
Average length of service in the company	9.08 years
Gender	
male	50%
female	50%
Mean age	45.08 years
male	44.83 years
female	45.33 years
Economic field *	
hospitality	12.5%
retail	12.5%
training	12.5%
human health	12.5%
translations	6.25%
business consulting	18.75%
accounting	6.25%
engineering service	6.25%
Size of the business	
Small company	58.33%
Middle-sized company	41.67%
Average number of employees	16.91 people

* In relative frequencies (used to express how often every service field occurs against total fields occurred; some companies expressed more than one field).

The primary data were processed in both inductive and iterative phases and similarities and dissimilarities among responses were analysed. Then, we grouped processed data on every research objective so as the distinct configuration of business scope, digital resources and activities would result, thus providing a comprehensive picture of how enterprises adopt and realize digitalisation in different areas of the service field.

4. Results

The distinct configuration of business scope, digital resources and activities provides a comprehensive picture of how enterprises adopt and realize digitalisation in different sectors. This contributes to the concept of digital transformation of business models within a given industry and the trends of digital transformation of entire industries. These facts shape the challenges for the digital sustainable entrepreneurship [87]. For example, the transformation of information technology, and especially health information technology, has also definitively moved in the healthcare context from the functional level to the 'fundamental driver of business value creation' [88]. Thus, health information technology enables a diverse approach to digital technologies, offering numerous configurations of digital health business models. The unique configurations of value in the form of combinations of activities and resources [89] show a shift in the way healthcare businesses have been done by now and how businesses do use digital technologies to create more value in the transformation process [90]. To enrich the literature with the outcomes of the study, the authors structured the discussion based on the proposed objectives as follows.

(O1) Identifying the strategic approaches of the entrepreneurial businesses within the digital business environment

According to the research instrument, data collection first identified the companies' strategic approaches based on their general objectives. Our aim was to analyse how digitalisation had transformed the business environment in general, and every company in particular.

In this regard, the first topic consisted of seven sub-topics aimed at analysing data about the strategic approach of the economic entity that the participant in this study represented. The research question was to identify whether digitalisation represented one of the key objectives within the strategic approach for the company's 5-year future. Regarding the general strategy of the company, we identified that 75% enterprises of the sample had a focus strategy (of which, 33.33% centred on quality and 41.67% on the business portfolio), and 25% had a diversification strategy which consisted of enlarging their ranges of products and services. Within the sample, 8.33% companies were also centred on cost reduction, whereas another 8.33% followed a liquidation strategy. Moreover, 25% of the participants stated they were clearly focused on digitalisation; sub-sampling showed that these were the companies which mainly offered training and business consultancy and which had had to operate online within the lock-down times, activity for which they needed a lot of information and communication technology resources and skills.

When asked about the general objective of the company, all the respondents correlated their responses to the strategy they had previously expressed within this research. Growth was the aim of 88.33% of the respondents, but it was seen differently, as:

- The expansion of the premises used (15.38%);
- The increase of the economic indicators like turnover and profit (23.07%);
- The optimization of the distribution model (7.69%);
- The promotion and the internationalisation of the business (15.38%);
- The development of customers' portfolio with service diversification and employment of experts (15.38%);
- The focalisation on quality (7.69%);
- The development of human resources (15.38%).

The figures presented are relative frequencies. However, in terms of digitalisation, no respondent made a clear reference to digitalisation as being an independent objective of its company, showing that Romanian companies needed a proper digitalisation strategy correlated to the opportunities and threats of the business environment.

Under such circumstances, the level of digitalisation of the Romanian business environment was assessed on a Likert-scale from 1 (very low) to 5 (very high). The sample average was 3, with 16.67% participants surpassing the mean and 16.67% having provided scores below it. Participants mentioned that there were many companies which operated in fields which are hard to digitalise or were located in rural areas where there was a

low connectivity. Moreover, a participant highlighted the non-existence of a digitalisation culture at entrepreneurial level in Romania, whereas another subject stated that the process of digitalisation should be improved, once having been started. With regard to the digitalisation of their activity field, the same assessment scale was used and the sample average obtained was 3.33, with 50% participants surpassing it. Participants underlined that the digitalisation rhythm was accelerated 'especially due to the need to work online during the pandemics'. Health care was provided as an example for the innovative customer-oriented solutions it benefits from, but such resources were unavailable to small- and middle-sized companies because of their high costs and of employees' low level of digital skills. Regardless, the present level of digitalisation was not perceived as a sufficient one, as one subject highlighted, 'it is not enough to simply use the online platforms'.

(O2) Analysing the importance and pace of digitalisation within businesses' strategic objectives and their entrepreneurs' visions

All participants in this research were convinced that digitisation should be a key objective, regardless of the sector of activity their company operated. In their opinions, the use of IT applications increased business efficiency and helped in reducing costs. The representative of a tourism company said that 'with the software for reservation *Pynbooking*, the tourist can check in and out directly from the application whereas the programme also performs the distribution of rooms instead of the receptionist'; this programme, which practically replaced the human work 'reduced the 4 positions of receptionists from the organisational chart'. In addition, the monthly subscription was 'cheaper than the costs with personnel in the front office department' and also eliminated the human errors and the risk of transmitting customers' personal data externally and even 'the whole customer data base to the competitors in the market'. Additionally, another respondent considered that the use of QR codes instead of printed menus as well as, the use of tablets/other devices for processing orders were very important advantages brought by business digitalisation. The mutual agreement on this subject was that digitisation made hospitality more efficient.

Another category of respondents suggested that in the healthcare sector, without digitisation of medical information and computer-assisted medical equipment, companies would not be able to survive in the market. The use of telemedicine would become 'a common practice in few years', as a participant highlighted.

The subjects repeatedly brought into discussion the fact that the use of IT applications improved communication with partners, but also led to a better organisation of educational/training activities. From the point of view of information collection and processing, the positive effects in terms of carrying out economic-financial analyses were also mentioned by the majority of respondents. However, the industrial sector was the one which showed the highest dependence on digitisation because all company operations were done in a central programme called SAR or ERP.

Furthermore, interviews with entrepreneurs revealed that, although all the respondents adapted to the current situation on the fly and took the necessary steps to digitise the company, in most cases, the entire digitisation strategy was designed by the entrepreneur, with the management team only taking care of the implementation of the strategy. The above-mentioned statement matches the findings presented in the literature, which highlight that the entrepreneur's mind-set regarding digitalisation is essential in order to develop innovation in the company [54].

A specific situation was described regarding the medical field. Due to the rapid emergence of new medical applications and devices using objective methods of patient assessment (software, implants, robots, etc.), but also to the complexity of telemedicine implementation, which required time and effort to identify the ideal parameters for working with the patient and to customize therapy to every patient, digitalisation was considered a challenge. For this reason, entrepreneurs in this field hired certain people to whom they delegated the responsibility of developing and diversifying the digitalisation plan.

The digitalisation pace of the analysed businesses was assessed with a Likert scale, respondents having to express their opinions with a score from 1 (very slow) to 5 (very

rapid). The sample average was 3.5 with 50% of the respondents having provided answers below this average. Moreover, the respondents highlighted the permanent need of keeping up with the new and useful applications, which were continuously updated. The human health was exemplified as a field with a very rapid level of innovation, which Romanian small companies found difficult in keeping up with.

The main factors influencing the speed-up of the digitalisation pace, as mentioned by the participants were:

- The need to control and reduce costs (with transportation, daily allowances and food, as for example);
- The comfort brought by technology as ‘it is more reliable than the human resources’;
- The competition;
- The low quality of human resources or even ‘the lack of human resources’ in some activity fields;
- The rhythm of development of the market, with all the changes brought by the pandemics (as for instance in education);
- The economic crisis;
- The easy access to service from all over the world;
- The high costs of digitalisation which ‘makes it difficult to implement’, as ‘there is still a lot of information on classic support and the times of its transfer are long whereas customers are reserved in using it’;
- The time and money spent with developing ICT solutions and programmes, especially of eLearning and eHealth, as well as with ‘learning how to use it’;
- The rapid rhythm of innovations and the technological evolution;
- The access at electronic devices and at digital information in real time;
- The development of communications with the help of platforms, as speeded up by the COVID-19 pandemics, which resulted in an increase of resource usage;
- The digitalisation imposed at national level with regard to financial reporting;
- The need for data protection.

(O3) Determining the long-term strategies (3–5 years) and the costs of digitalisation

The entrepreneurs interviewed stressed the importance of electronic archiving with the aim of eliminating paper and printed documents, thus reducing the company’s environmental footprint. Overall, 66% of the respondents mentioned that this process was very slow. According to the opinion of a respondent, ‘for digital archiving of invoices, according to the law, it is necessary to have the client’s agreement to receive the invoice in digital format, which must be given by an additional act to the contact of collaboration (we have 6000 clients and collecting such documents lasts); the process of digital archiving of contracts is even more cumbersome because according to the law, both partners must have an electronic signature and few of our partners have it so far’.

A common strategy found in the development plan of both industrial and distribution companies was the introduction of a B2B platform and the introduction of automation programmes for repetitive processes. In addition, the production companies proposed to develop their online shop and the B2B sales part, where the customer could enter its own orders, a strategy already implemented by distribution companies. Correspondingly, the entrepreneurs from the distribution companies mentioned that for them, the introduction in the warehouse of a digital programme to replace the manual inventory was a priority; also, the purchase of an SAP system (the leading ERP system in Europe, which is used almost by most manufacturing companies) was a clear investment need [50].

Almost half of the respondents rated that they had as an objective the acquisition of more hardware devices that would make work easier, such as:

- Devices to adjust the temperature in the rooms by phone via an app;
- Devices to issue the delivery report through a digitalised system (as in courier companies);
- Digital devices and robotics to be used as the primary mode of therapy on a daily basis;
- Devices to increase the digital security within their businesses.

One of the participants who represented the medical sector stressed that ‘we want 60–70% of therapies to be device-based in the future, compared to the today’s 10%’. In addition, representatives of consultancy firms expressed the idea that they would focus on attracting the most important providers of continuous vocational training services so as to cover the full range of courses, training and tutoring as well as developing the e-learning business unit by developing digital products in order to attract new customers and diversify the courses offered online.

Furthermore, entrepreneurs unanimously asserted that their business was digitised. Out of the total respondents, 30% considered that the level of digitalisation in their company was above the average of their sector, 50% of them stated that they were at the same level as their competitors and 20% considered that they needed to make efforts to reach the level of their competitors.

In terms of hardware resources, all start-ups were equipped with PCs, laptops, smart phones, scanners, digital printers, projectors, wireless routers and access points. However, depending on the specificity of the activity, their equipment varied greatly. While companies in the human health sector had invested large sums in various medical devices (ultrasound, EKG, Holter), those in the tourism sector, although equipped with the latest devices used in the hotel industry (smart locks interconnected with the reservation software, smart plugs allowing the automatic switching-on at a scheduled time of the appliances used to prepare breakfast and sensors turning the ambient lights on when inserted), had allocated a smaller percentage of their turnover to investment in digitalisation due to the lower cost of these devices. A representative of this industry pointed out that these devices helped in making the business more efficient: ‘the tourist receives an entry code by email or at the reception with which he is allowed access to the room, without the need for a key or card; the disadvantage is that the time of check out is not known because he does not leave the key or card at the reception and therefore it is not known when the room is free for cleaning or if he releases the room before 12 o’clock’.

A great diversification of devices with increased complexity can be found in the industrial and goods distribution sectors, where digitally controlled machinery, digital weighing machinery, goods transport trolleys with built-in scanners as well as mobile digital receipts transmit information to SAP or ERP via their own servers, avoiding human error, reducing the time required for operations and making work much easier.

As far as software resources are concerned, the answers of the research participants varied greatly, every field of activity requiring specific software, with an unanimity only regarding the existence of own websites. In the field of professional training, the essential software resource was a communication platform (the examples provided were Moodle, Zoom, Teams and Google Meet) while for retail companies, the typical applications were those for financial accounting and management, mainly Saga (a primary accounting software).

In the healthcare sector, the areas of Therapy and Disease Management, Administrative Automation and Digitisation emphasize the relevance of digital transformation, according to the participants in this study. The entrepreneurs supported a strong trend towards software technology systems and solutions in the field of therapeutic approaches and human health. In particular, they highlighted a wide range of medical device technology systems that combine software technology, both cloud-based and on-premise, with any type of specific medical hardware or device, such as an MRI, to facilitate clinical workflow. Software was also used to interpret data collected from the patients, both for qualitative and quantitative statistical analysis.

A second field which is centred on software was tourism. The main working tool that accommodation companies used was the Pynbooking software, showing the availability of rooms whereas being interconnected with all booking platforms (Booking, Airbnb, including the guesthouse website) to help in making reservations. In parallel, applications were used to turn on the lighting by the phone and to adjust the intensity of the lights or to turn on the breakfast machine.

- Companies with a complex production and distribution activity used SAP (System Analysis Program) or ERP (Enterprise Resource Planner) as basic tools. These programmes collected information and were interconnected with all the applications used by the companies: WMS (Warehouse Management System) programme for stock management and goods outgoing from the warehouse;
- SFA (Sales Force Automatisation) application used by the sales departments which took the orders from the customers and automatically sent it to the ERP at the headquarters for validation BI (Business Intelligence) reporting and analysis programme used by top management;
- Neomanager software;
- ERC, a financial accounting software helpful in customer management;
- EDI (Electronic Data Interchange), an interface between two ERP systems, used in the relationships with suppliers to replace and confirm orders as well as to confirm the receipt of goods.

In addition, the costs of digitalisation were analysed with the help of: a. the rate of digitalisation costs in company's total costs; b. the investment in developing digital competences; c. the need of cost optimization to invest in digitalisation. The costs of digitalisation were presented as a percentage in enterprises' total costs. The sample average was 7.33% with 58.33% subjects surpassing this average and 41.67% being below it. The respondents stated that investment in digitalisation was given both to software (ERP implementation, maintenance and updating) and hardware (equipment).

With regard to the benefits offered to employees in order to develop their digital skills, only 41.67% of respondents stated that they had performed such spending, generally in ICT courses and online and offline training aimed at making employees using better the technology, especially when the companies had implemented advanced systems and innovations. A respondent indicated that she offered their employees legal leave for education according to the stipulations of the Romanian Labour Code. The reasoning for non-investment was: 'our IT department implements the digitalisation within the departments' or 'employees have the necessary digital skills as we assess them during the interviews'. When asked whether they needed to optimize and/or reallocate resources in order to digitalise their companies, 66.67% participants provided a positive answer. They either re-structured the European funds to a different structure which better met their needs or they accelerated the digitalisation as a market need (to meet their customers' needs or as the pandemic required digital resources and work in online environments to operate in some fields like education and sales).

(O4) The future of business digitalisation: cyber security

All the respondents agreed that digitalisation offered the ability to cross time and space boundaries, providing access to products and services to people in wide geographical areas. Entrepreneurs who had already started international expansion said that digitisation gave them the right tools to implement their internationalisation strategy. The strategy of promoting services online and of collaborating with customers abroad was mentioned to have been greatly facilitated by ICT, whereas the costs of attracting domestic customers were greatly reduced. However, the future of business digitalisation was definitely cyber security with various challenges and solutions it brought within the businesses' sustainable digital development. In order to assess opinions and attitudes about this topic, we split it up into six sub-topics.

The first identified entrepreneurs' concern for enterprise data security and the methods of protection identified to respond to cyber-risks. All the 12 respondents stated that cyber security represented a new and important challenge in the business environment because, with the development of the Internet and the emergence of the facilities it offered, the threats and risks of information leakage multiplied, a fact also mentioned in the literature [75,76]. Often, entrepreneurs' knowledge in this field was low, so additional resources were needed to protect against cyber-attacks. All the entrepreneurs interviewed stated that it was

imperative to control critical information and develop a data security strategy in order to avoid data theft/loss in the company.

If all the companies, regardless of their size, used classical security solutions (such as firewalls, antivirus systems and password-protected devices) and 66% of them used only institutional email addresses, the large companies in the sample, which represented 33% of the total, tried to control data input and output in the company with the help of external companies by contracting with specialized companies. One respondent pointed out that his company 'was constantly looking for new solutions, applications that make our work easier but it is very difficult to do it only internally. We try to have security on hardware, wireless, phones, tablets because they are all connected to the ERP and a virus or an attack jeopardizes the functioning of the system. We work with an IT company that sends us daily reports or alerts if a virus is detected, which is then sent to all employees.' Hence, we underline that a suitable method of managing cyber-risks is risk transfer with specific departments or third parties. The entrepreneurs' answers were not very different. Another one stated that her company used 'antiviruses on all devices, if it passes this threshold the IT company, we work with takes over and fixes the situation. At present it is difficult for an external hacker to get past the security system provided by the collaborating company, easier would be for someone inside the company to heck-it'. Only one respondent mentioned that his company stratified confidential information and encrypted data when such information left the company. Moreover, the representative of one small company mentioned that 'the method by which customer data is protected is by storing it in the cloud'. Clouding is, thus, a second method for dealing with cyber security.

In terms of software updates so as to reduce the risk of cyber-attacks, the majority of respondents stated that they had purchased licenses for all the software, including antivirus software, and that automatic updates were done periodically. One respondent mentioned that the company had 'a constant collaboration with our software solution providers, and their policy includes, in addition to regular updates, communicating upgrades to customers. The Pynbooking software provider is constantly updating and has recently introduced a function to check suspicious bookings (e.g., the customer makes a booking for which he gives the details of a card and then asks for the booking to be cancelled but the money to be refunded to another card, the suspicion arises that the first card is stolen)'. Regarding staff access to the company's digital resources, the respondents unanimously mentioned that each employee had limited access to information, and could only access it from the employee account, which also allowed access to the software used in the company, which was accessed with a password. Two of the companies in the sample, those with the largest number of employees, stated that their staff was regularly warned to report anything doubtful or strange (self-awareness was increased). At the same time, to prevent attacks on the company's digital resources, more than half of the companies regularly train their employees through various learning methods, like courses and information sessions. In this regard, one participant said that in his company, 'warnings are sent whenever something suspicious is detected, we make screenshots and send them to all employees to inform and warn them'.

Under such circumstances, we identified some solutions that Romanian businesses use to prevent loss of access to company's information and digital resources. More than half of our respondents highlighted that they did periodic backups in the cloud while only one company from the retail sector mentioned that all info was saved periodically on an external hard drive. Entrepreneurs from industry and distribution companies mentioned that every application which their employees had access to had two types of permissions: as a user (the employee who enters data) and as an administrator (the IT department which extracts the data). The representative of a distribution company stated that 'in the future, for certain applications and only for administrators, we want to introduce the two-way authentication, to be able to access the system only after entering a password received by SMS'. Moreover, all the respondents who have signed up with IT companies considered that the cost of the monthly subscription did not represent a financial effort. At the same time, outsourcing

to an IT company was mentioned by some respondents as it offered many advantages: protection of servers, internal networking, disposal of end points (computers, tablets, phones, laptops), tracking licenses, and permanent information about new applications which can be implemented in the company. All the results challenged the authors because the consistency of the information obtained allowed structuring and highlighting the main aspects that can contribute to sustainable digital entrepreneurship. Starting from digitalised business environments and digitalisation within businesses entrepreneurial vision, the company's strategic objectives could be aligned with the aim of addressing and implementing sustainable digital entrepreneurship, already aware of most participants. Digitalisation strategies and costs seem to be issues overcome by entrepreneurs' willingness to digitalise. On the other hand, cyber security remains high on the list of priorities when it comes to raising awareness. Although this field of area is not so well established among the companies' priorities, the awareness potential presented by the entrepreneurs still places it on the list of necessities for a sustainable entrepreneurship in the digital environment. The opportunity to treat these aspects as independent objectives in the company's overall strategy outlines the Digital Sustainable Entrepreneurship Model (Figure 2) with outcomes with an emphasis on synchronizing the entrepreneurial vision, strategic approach for digital transformation, cyber security assets for future development, and digitalisation actions deployed for a long-strategic term. It represents the overall picture of qualitative research results with scientific potential.

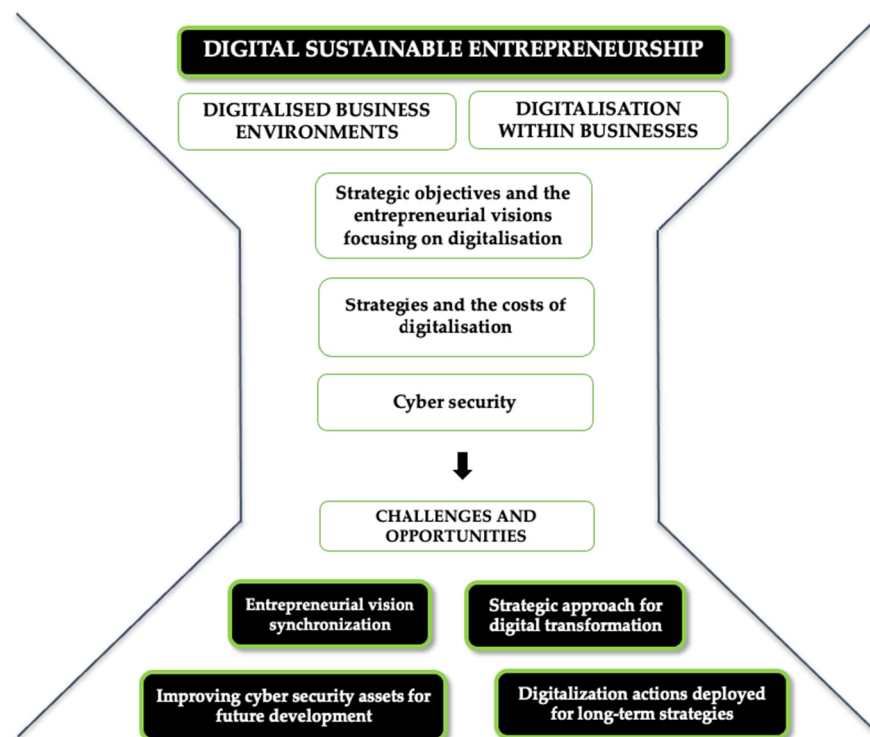


Figure 2. The digital sustainable entrepreneurship model.

Referring to the generations mentioned above, our study shows that Generation Z respondents have been using digital technology from a young age, are familiar with the Internet and social media, want to work with the latest technology and believe that only technology and automation will help them innovate and create a more equitable work environment where there is no discrimination. Entrepreneurs from the Y Generation are characterised by an increased use of and familiarity with communication, media and digital technologies, believing that future technologies will help them focus their attention and efforts on creative activities. They are learning to use technology in their daily work activities to deliver the best results. They are also accustomed with training, both as trainees

and trainers and believe in remote working and segmentation of businesses to match better the employees' life styles. Generation X respondents feel that they need technology to accomplish their tasks, but it is not integrated into all their activities, they resort to using it to make their work easier. Baby boomers said they are not digitally literate, preferring to delegate responsibilities involving the use of digital technology and considering that the manpower will never completely be replaced by technology.

5. Discussions

The results obtained in this paper are partially supported by the findings of previous contributions in the literature. As some authors indicate [71], digital transformation creates the right environment for business growth. Our results are in line with those obtained by the literature confirming that cybersecurity and data protection can be considered the main pillars of this transformation [91]. However, in contrast to past research [92], our empirical evidence does not permit us to generalize that digital transformation requires changes in the organizational structure of the firm.

The results produced in this work run parallel with previous research on the cost of digitisation. It [66] considers the cost of digitization as a barrier to its implementation; hence, the present research highlights this factor, emphasizing the role of the cost–benefit analysis to better understand the impact of digitization processes implemented in enterprises, which is also in line with statements in the literature [66,67].

The results regarding the transformation of health information technology are consistent with empirical evidence from previous research. Health information technology transformation, as Bharadwaj [88] suggests, has definitely moved from the functional level to 'the fundamental driver of business value creation' [83]. Although this concept has gained popularity in the literature, it is mainly appropriate in scenarios where healthcare firms are aiming at scaling the business and not just providing healthcare services by physician entrepreneurs.

Our research goes a step further than previous research, empirically demonstrating that the company's economic performance is directly influenced by the level of digitization of the company, also highlighting that only companies with a digitized model will be able to lead in terms of innovation.

In addition to this theoretical contribution, this paper offers implications relevant to both managers and entrepreneurs as well as policy makers. Firms need to be aware that a high level of digitisation will allow them to gain certain privileges in terms of information access and management, cost reduction and international expansion possibilities. However, it is not only about management skills at the overall level of the firm's portfolio, but also at the individual level, i.e., for each company employee. This is a challenge, on the one hand, for firms, as the whole firm needs to be managed towards a digitally oriented culture change, and on the other hand, at the institutional level, in the sense of the need to foster national and regional policies supporting firms in their move towards digital sustainable development.

6. Conclusions

The authors point out two scientific outcomes. The first one covers the digital sustainable entrepreneurship from the entrepreneurial vision point of view, by presenting the entrepreneurs' attitude with increased consciousness about digitalisation and transformation processes. The paper highlights the nexus between strategic objectives and entrepreneurial vision, underlying the permanent need for support and training. The second scientific outcome which brings value for academia is the proposed framework for digital sustainable entrepreneurship expressed with the illustrated model.

These theoretical implications draw the attention of the members of the international educational environments who, on the one hand, train the future specialists to support and advise the entrepreneurs to create a vision based on digital sustainability and the entrepreneurs themselves. On the other hand, researchers have the moral duty to under-

stand the reasons why digital transformation is not a stand-alone process and can only be achieved if it is in full harmony with the company's vital functions. The entrepreneurs' mind-set and resources available for a long-term process, which they fully acknowledge, can allow the academic community to criticize and present the most suitable solutions to be implemented within the business environment.

Contrastingly, the managerial implications expose the necessity of unlocking the state of mind regarding the way entrepreneurs run their businesses. A company with non-digitalised model will find out that its advertising efforts or classic techniques to attract new consumers will no longer be fruitful. Updating the vision of how they run their businesses, reformulating objectives, aligning actions, and improving the security of their working methods must be top priorities for unlocking the potential that companies have on the market.

The limit of the study is represented by the research method applied. The in-depth interviews do not allow us to extrapolate the findings for the entire researched population, but it is a suitable technique to discover new ideas, frameworks, or concepts to study. In the case of this paper, by choosing this method, an approach for a digital sustainable model was conceptualised, and it can represent the starting point for quantitative research, the first future direction proposal. By conducting a survey-based study, the reliability and the validity of the model can be statistically tested. Another research perspective is the opportunity to extend the study at the European level, trying to align the research aim to the Digital Decade priorities presented through 2030 Digital Compass, by adding the four elements (skills, infrastructures, business, and government) in the proposed model. Additionally, conducting a scientific comparative review can represent another opportunity for future research.

Author Contributions: Conceptualization, C.N., E.N., D.M. and O.B.; methodology, E.N.; formal analysis, C.N., D.M. and O.B.; investigation, C.N. and O.B.; writing—original draft preparation, C.N., E.N., D.M. and O.B.; writing—review and editing, C.N., E.N., D.M. and O.B.; visualization, E.N.; supervision, D.M.; project administration, O.B.; funding acquisition, D.M. All authors have read and agreed to the published version of the manuscript.

Funding: The research was funded by Transilvania University of Brasov within the project CNFIS-FDI-2022-0012 "Innovation and Entrepreneurship at Transilvania University of Brasov—INOVAANT".

Institutional Review Board Statement: Ethical review and approval were waived for this study due to the lack of sensitive information, ensuring full anonymization of the personal information for all participants included in the study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data are available on request.

Conflicts of Interest: The authors declare no conflict of interest.

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