

Innovation of Indonesian School Book Publishing Companies in Response to Digital Transformation

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Abstract

This study aims to determine the digital transformation of education in Indonesia and how PT Tiga Serangkai, a school book publishing company, innovates as an adaptive attitude to the transformation. Researchers used a mixed convergent parallel design approach. The study population included primary and secondary schools in Central Java Province that used Tiga Serangkai products. Researchers obtained 119 schools as a sample with a confidence level of 90%. Data collection using questionnaires to determine the determinants of innovation acceptance and interviews with selected resource persons. Qualitative data were obtained through literature studies, focus group discussions, and in-depth interviews with selected resource persons (purposive sampling). The results showed that there is a digital transformation in education in Indonesia in the form of changes in learning media, procurement systems, and the amount of budget. PT Tiga Serangkai responds with innovations in production, distribution and consumption patterns, and products. This article reveals the digital transformation in the scope of education that occurs in Indonesia. The research findings show PT Tiga Serangkai's book publishing adaptability through product innovation. This article contributes to the literature on adapting schoolbook publishing companies to digital transformation. Not only digitizing products in the form of e-books but also complementing with supporting facilities that provide convenience, comfort, and completeness for schools which are the primary target consumers of their products.

Keywords: *Publishing Industry, Digital Economy, Economy Digital Transformation, Innovation Product, Company Adaptation.*

Introduction

The Industrial Revolution 4.0 has brought rapid changes in various fields, especially digital technology. Handoko et al. (2019) mark the industrial revolution 4.0 in the form of automation of manufacturing processes to a new level by including flexible and adaptable mass production technology. Most academics have questioned how developing countries will remain relevant and how the industrial revolution 4.0 will lead to further amplification of unemployment among its workforce (Sait & Anshari, 2021).

Innovation is a necessity that is carried out to maintain the competitive advantage of an organization or company. In general, innovation is considered a critical factor that affects company performance (Shouyu, 2017). Innovation refers to using new technology or new management practices in an organization to achieve targeted improvements in its operations (Adam & Alarifi, 2021). Another definition of innovation is the intentional introduction and application in a new role, group, or organization of ideas, processes, products, or procedures to relevant units of adoption designed to benefit individuals, groups, organizations, or broader society significantly (Acar et al., 2019). Innovation is value creation by using relevant knowledge and resources to convert ideas into new products, processes, or practices or improve existing products, procedures, or techniques (Varadarajan, 2018). One of the things that various companies are currently intensively doing as innovation is to carry out digital transformation by integrating technology into the company's business processes (Vaska et al., 2021).

Digital transformation is a change in how a job is handled by utilizing information technology to increase the efficiency and effectiveness of a job. Digital transformation is changing almost all lines of business – organizations, current or future business models, ways of running business processes, ecosystems, services, and products (Furjan et al., 2020). The digital transformation journey begins with creating digital versions

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of analog or physical items. This shift then leads to shifts in business operations, models, and competencies to adapt to available technologies, and it never ends. Continuous innovation, the ability to respond quickly to change, and the ability to take advantage of challenges and opportunities are necessary to ensure company success (Rupeika-apoga et al., 2022). The formulation and implementation of digital transformation strategies have become a significant concern for many pre-digital organizations across traditional and medium- and large-scale industries (Chanas et al., 2018). The transformation framework describes how digital transformation is usually carried out or should be implemented in the company in general steps, about how a digital transformation should be carried out: initiation, ideas, assessment, commitment, implementation, and sustainability (Veldhoven, 2022). In the era of postmodern industrialization, sustainable business performance is essential in supporting success in a competitive environment with various social and technological challenges (Haseeb et al., 2019). There is a new unit of analysis of the business model. They emphasized a holistic approach to explaining how companies do business, focusing on the company's activity system and partners, creating added value, expanding the business reach, and making digital technology the economy's main driver (Li, 2018). The digital economy includes three major components. Namely infrastructure (hardware, software, telecommunications, programmers), e-business is a process carried out through a computer-mediated network, and e-commerce is the value of goods and services sold through a computer-mediated network (Mesenbourg & Bureau, 2001). The digital economy refers to a system of institutional categories (concepts) consisting of high-level achievements and progressive technologies, mainly digital, that serves to increase the effectiveness of social production, as well as an economy based on the creativity of professional knowledge and markets and societal innovation (Afonasova et al., 2019). The digital economy considers information technology the core to providing a new impetus for innovative environmental management (Y. Li et al., 2021). The digital economy is also not a different sector. Still, a system of economic and social relations based on digital technologies, the real and virtual worlds, will qualitatively transform the economy and energy markets (Litvinenko, 2020). In the digital economy, the standards process begins with developing, assembling, and anointing new (upstream) technologies with substantial implications for downstream innovation in technical complexity to contribute technologies and shape standards (Teece, 2018).

The development and progress of the industrial revolution 4.0 has changed the economic, social, and political system but also affected the education system (Kowang et al., 2020). These changes also have an impact on changes in Indonesia's education policy. Such education policies must equip students with skills that will enable them to face the demands of 21st-century skills and the industrial revolution 4.0 (Noh & Karim, 2021).

Policy changes in the world of education in Indonesia also influence the development of the publishing industry, especially teaching material books and school books. Vasileiou et al. (2009) state technological developments and the internet has changed the nature of digital content and its accessibility and opened up new opportunities for the publishing industry. This change has been a concern in the last decade. The era of the industrial revolution 4.0 makes publishing companies inevitably have to adapt. The industrial revolution 4.0 has led to various lines of life-transforming towards digital, including in the publishing industry. Many large publishers offer eBook titles to libraries, and small and independent publishers are also entering this new market (Katan et al., 2018). Digital transformation in publishing companies is shown by increasingly rich and diverse content. Then, ranging from database products to reading terminals that combine various hardware and software, there are e-commerce platforms, internet content creation platforms, and various original literature created on online venues (Zhang et al., 2020). How publishing companies relate to digital technology and their business models can be understood to the public policies underlying the publishing industry in doing business (Magadán-díaz & Rivas-garcía, 2018)

In Indonesia, Balai Pustaka, precisely after independence, began to publish school books after previously fighting the combined forces of Dutch publishers (Teeuw, 1967). In the 1990s, the government handed over the pattern of book management to market mechanisms that encouraged fair competition for publishers. In 2019 the Government, through the Ministry of Education and Culture, developed an online school procurement system named Sistem Informasi Pengadaan di Sekolah (SIPlah). Then, through the

Circular Letter, the Minister of Education and Culture said each school spends on goods or services for education units online through the SIPLah application (Circular Letter Nomor 8, 2020).

On the other hand, structural changes occurred due to the Covid-19 pandemic. This condition forces learning to be carried out online. Distance learning has an impact on the need for teaching materials in digital form that can be accessed anywhere and anytime. The need for automated digital teaching materials demands information and communication technology infrastructure services and good internet connections. This need is in line with Garba et al. (2015), who stated ICT infrastructure and internet connectivity in educational institutions provide opportunities for students and teachers to adopt 21st century teaching and learning methods that encourage the development of 21st-century skills.

The phenomenon of online learning impacts e-book sales which are expected to increase from year to year along with the increasing number of smartphone users. The e-book phenomenon has prompted manufacturers to launch more types of e-readers or tablets and make e-book content more diverse (Chang et al., 2015). Research on sales on Amazon in mid-January 2016 shows e-book sales outsell print books (Greve & Song, 2017).

Over the past decade, the foundation of the Russian market facing electronic books has been pursued in the form of electronic book publishing, digital distribution, electronic library systems market, device market for reading e-books, audiobook market, etc (Lizunova, 2019). Kumbhar's articles (2018) that discuss e-book trend research, mentioning e-books immediately becomes important by looking at library budgets, acquisitions, cataloguing, services and usage. Therefore, e-books are used as a commodity market by publishers and aggregators.

The use of e-books does have a good impact on improving academic performance and student motivation such as experimental research conducted by Nurgaliyeva et al. (2019) which compares the learning outcomes of classes that use e-books and those that do not use e-books. However, Nurgaliyeva et al. also noted the need for further research in the development of e-books that pay attention to the design of digital educational content that facilitates e-learning and increases learning efficiency.

Magadán-Díaz & Rivas-García (2020) highlight the transformation of the publishing industry over two decades and the challenges posed by innovation and technological change. Publishing companies need to consider (a) new spaces for marketing and interaction with potential customers, (b) the emergence of e-books as a new format for content that can be enhanced with unexpected elements (hypertext, music, video, augmented reality, among others) or (c) print-on-demand (POD) as a new production process that frees publishers from minimum prints that, otherwise, would end up saturating publishers' warehouses.

Unfortunately, there is no concrete solution to anticipate the highly dynamic transformation of the digital economy. On the other hand, publishing companies are indirectly exposed to this dynamic change. Furthermore, publishing companies must be adaptive to digital transformation. Companies need to innovate to face dynamic digital transformation. Innovation publishing companies must at least consider the main product features (Vasileiou et al., 2009), product should be interactive (Lim et al., 2020), usage pattern (Dawkins & Gavigan, 2019), business model (Magadán-Díaz & Rivas-García, 2020), and agency model (Johnson, 2020).

Based on existing conditions, it is necessary to conduct a special study on the publication of school books to anticipate digital transformation in the field of education. Innovations can be made to survive responding to developments, considering that the publishing industry has great potential to contribute to the country's economy. This study aims to find out how school book publishing companies adapt to this dynamic condition.

Methods

Researchers used a mixed convergent parallel design approach introduced by Creswell (2012) by using quantitative approach and case study of publishing company at PT Tiga Serangkai. The purpose of

researchers using convergent mixed methods was to collect quantitative and qualitative data together, combine data, and use the results to understand the research problem. Quantitative data was obtained using a survey of elementary and secondary schools in Central Java that are consumers of school books published by PT Tiga Serangkai. The sample size was calculated using the Slovin formula and obtained by 119 respondents with a margin of error of 10%. Respondents were principals or teachers who have the authority to determine school spending (users). Researchers used the Theory Acceptance Model (TAM) to determine the determinants of innovation acceptance from indicators of innovativeness, optimism, ease of use. Meanwhile, qualitative data was obtained through literature studies and in-depth interviews with selected speakers (purposive sampling) who had strong information about PT Tiga Serangkai's innovations in responding to digital economy policies in the field of education. The researchers also conducted a focus group discussion with 15 elementary and secondary school students as final consumers of PT Tiga Serangkai's products.

Results and Discussion

Forms of Economy Digital Transformation

Today's publishing industry is experiencing various challenges. In Indonesia, professional publishing associations are accommodated through IKAPI (Ikatan Penerbit Indonesia). In 2018, IKAPI members numbered 1,655 publishers. About 52% of publishers are located on the Java island (IKAPI, 2018). Of these, only about 711 publishers are active and only about 200 publishers are productive in printing books.

"There is a change in the curriculum, it is clear for business actors like us to have a very impact, the products we have printed, the products we have made, because there are changes. So we cannot sell and even if it is what he thinks is less it will definitely collapse. Maybe the government needs to think about business actors in this publishing world, of course, with policies that are not partial to one of them," (WA-Erlangga representative, June 7, 2022).

The Covid-19 pandemic has further exacerbated the condition of the publishing industry in Indonesia, where book sales have experienced a very sharp decline. This is due to educational books that are a mainstay for the publishing industry began to shift into digital form to adjust the learning process carried out online. The results of the IKAPI survey addressing the impact of Covid 19 on the book publishing industry in Indonesia showed that as many as 58.2% of publishers experienced a decrease in sales exceeding 50% of usual. Publishers also experienced a decrease in the number of book requests, namely 63.3% of publishers decreased by more than 50%.



Figure 1 Dynamics of Change in Indonesia Education Policy

The Circular Letter of the Minister of Education and Culture Number 8 of 2020 which contains the procurement of goods/services through online applications is a driving factor for teaching material book market business actors to be able to meet market demand that has begun to shift the market in the environment of education units (schools).

The results of the questionnaire found that out of 119 schools, 89% had conducted digital learning. Of the total 89% of schools that carry out digital-based learning, 74% of schools claim to know applications to access school books and 70% agree that accessing school books online is more practical than online.

"That's one solution that can be taken, because the impact of the pandemic is extraordinary. So, as one of the steps to avoid the learning loss, yes, among others, through online. By utilizing existing technological developments, "H – High School Teacher in Pekalongan, May 11, 2022.

In addition, 22% of schools have purchased e-books more than 2 years or before the Covid-19 pandemic. The highest percentage is 41% of schools that purchased e-books 1 to 2 years ago or precisely when the Covid-19 pandemic began. The remaining 35% of schools have only made a purchase in less than 1 year and 2% of schools have never made a purchase.

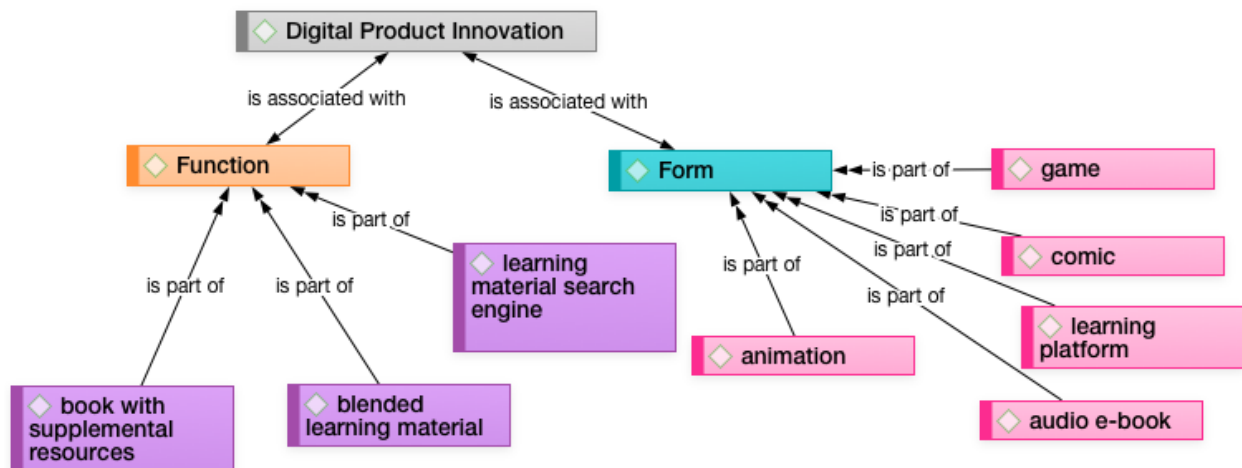


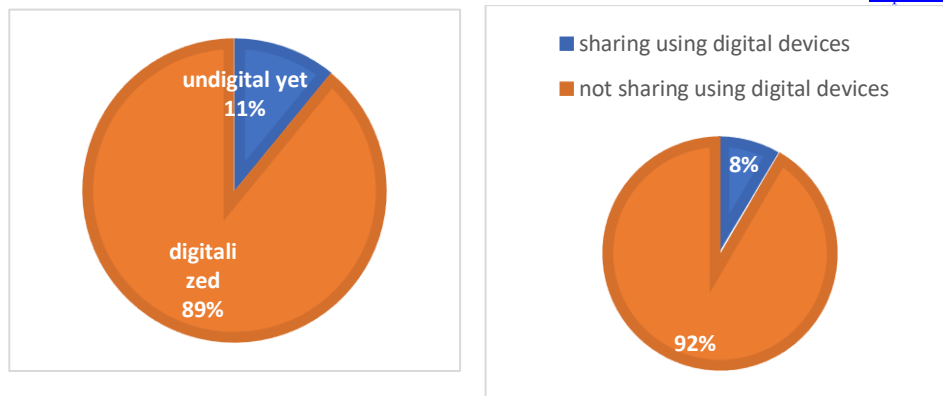
Figure 2 Student Perception of Digital Product Innovation

On the other hand, students as final consumers of school books see that there are two things that must be considered in digital product innovation. First, students tend to look at function. Students are interested in learning products that make it easier for them to access other sources of information (can function as a search engine). Students are also interested in products that can support online and offline learning and such as books that are equipped with supporting references. Second, students consider the form of digital product innovation offered. They like learning materials with attractive sounds and graphics such as games, animations, comics, and audio books.

Digitization in Schools

The company's ability to create innovations by utilizing technology is crucial for business sustainability (Ghobakhloo & Fathi (2019); Jitsutthiphakorn (2021)). Industry players must be able to answer customer challenges through innovation that includes learning, exploration, and exploitation. These three things mean that innovation is developed through the company's learning process in exploring or developing new products to achieve exploitation or economic benefits. Adopting this technology is crucial for business continuity in the schoolbook publishing industry. It is due to the digital transformation that has occurred in schools today which forces the publishing industry to be able to adapt.

Figure 1 Digitization in Schools



Source: primary data, processed 2022

Figure 1 shows that 89% of respondents out of 119 stated they had held digital learning, and 92% shared teaching materials with fellow teachers and students through digital devices. These results indicate that digital transformation in schools has occurred, and publishers must adapt to existing shifts as parties providing education teaching materials. Thus, an innovation strategy by utilizing technology is essential for publishers.

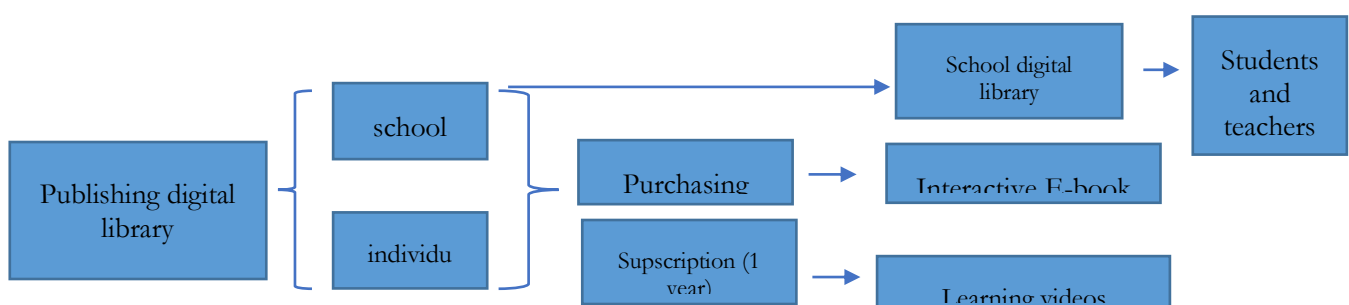
There was three times Focus group discussion to collect data. FGD 1 involves schools in the Central Java region represented by teachers/principals and parents. FGD 2 involves students from schools located in Central Java. FGD 3 involves the Central Java Provincial Education Office, the Central Java City/Regency Education Office, the Ministry of Religious Affairs, which oversees MI, Mts, and Ma, representatives of IKAPI Central Java, and school book publishers. From the results of field data analysis through FGD, several recommendations for innovation strategies that the publishing industry can carry out:

- Accessibility, interaction, and adaptability facilitate access to teaching materials to help realize the effectiveness of learning in the digital transformation period.
- There is product differentiation that can entangle students with the competencies possessed by teachers and support blended learning (face-to-face learning but still supported by digital facilities under the objectives of independent learning and anticipating learning loss).
- Socialization of technological innovations to consumers. Understanding of how to use these technological innovations.

Publishing Company Innovation

An innovation strategy that the publishing industry can develop under the recommendations obtained from the results of the FGD is the development of applications that help to access digital school book content (as a reader) with a digital library scheme. Through the application, users and schools can buy books and form like a library so students can access purchased books. In addition to schools, individual students can purchase or subscribe to readers through the digital library application. The following is the scheme of the digital library innovation strategy:

Figure 2 Digital Library Innovation Strategy Scheme Publishing Industry

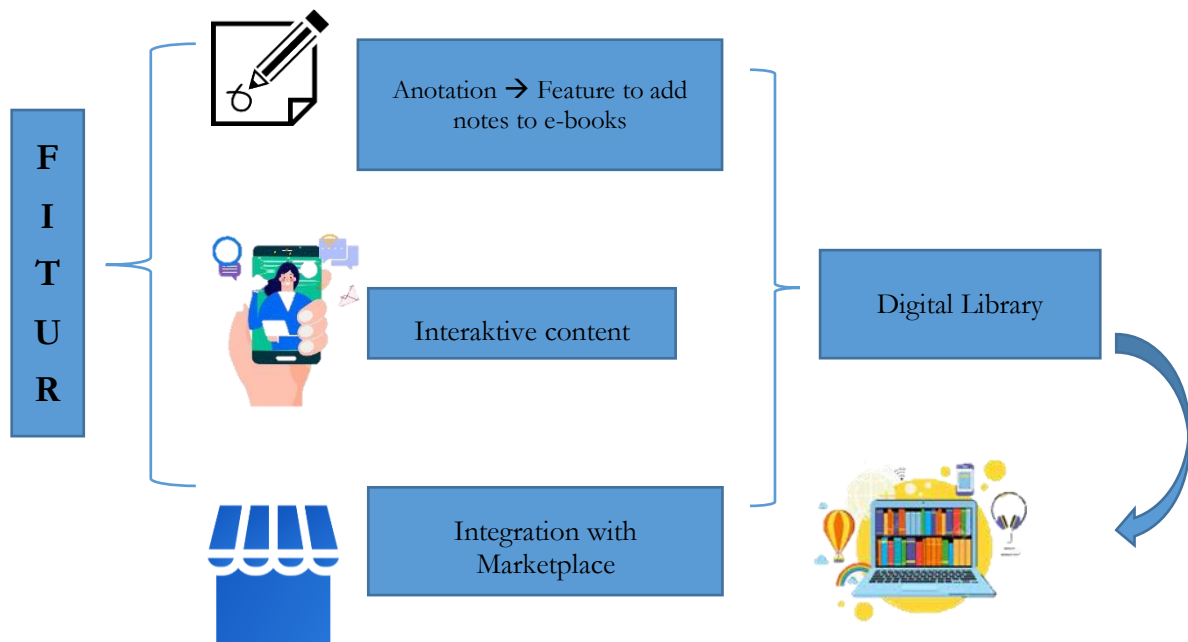


Like offline libraries, in digital libraries provided by publishers for schools, students can borrow books according to student needs with a predetermined loan period. When the due date ends, the readers will automatically return to the shelves of the school's digital library. The application can also read digital books purchased by schools and individuals at the publisher that owns the digital library. Or that have been purchased by schools through the SIPlah Marketplace, a marketplace for government ideas to conduct transactions for educational needs, including school books where the transaction uses BOS funds or School Operational Assistance.

The publishing industry created product differentiation to complete teaching materials, support the blended learning process, and anticipate learning loss. Printed books changed to digital, interactive e-books with short videos related to material explanations, note features, and learning videos to provide comprehensive answers to complement printed books in hybrid or blended learning.

The following is a scheme of technological innovation features that the publishing industry can apply in the face of digital transformation in the field of education:

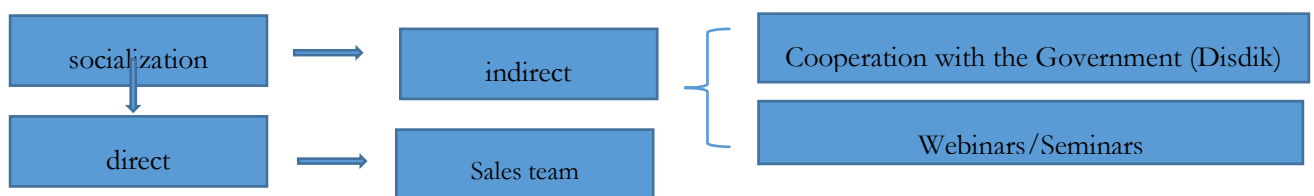
Figure 3 Schematic Of The Innovation Feature Of The Publishing Industry



As one of the units in the creative industry sector that contributes to state revenue or GDP, the sustainability of the publishing industry business is vital for the country's economy. The innovation strategy created by the school book publishing industry is to support the effectiveness of the learning process in the current digital transformation period and maintain the sustainability and sustainability of the publishing industry's business by adapting to existing changes.

Innovations run effectively through massive socialization with related parties, such as schools and students. Therefore, an effective socialization strategy is needed. The following is an innovation socialization scheme by issuing companies:

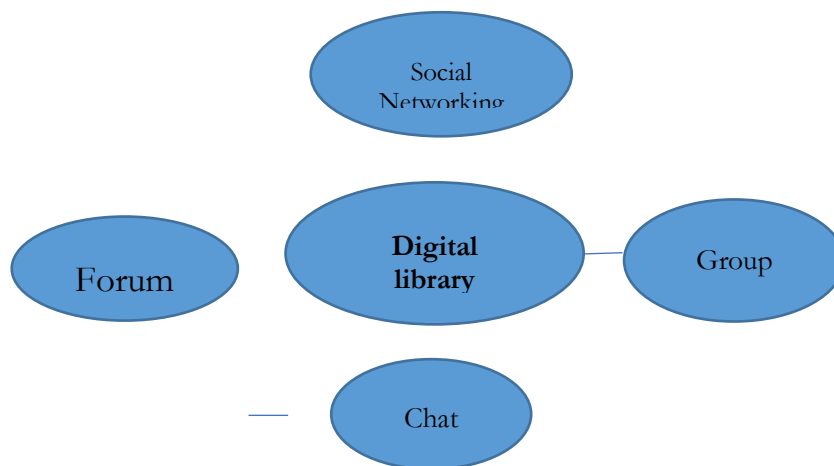
Figure 4 Publishing Company Innovation Socialization Scheme



The publishing industry can socialize innovation directly and indirectly to increase the effectiveness of socialization. By collaborating with the government to provide applications to support the learning process in the digital era and holding webinars/seminars as an indirect strategy. At the same time, direct socialization through sales teams who go to schools to introduce these innovations.

These innovations can create virtual communities. A virtual community, a group of people who communicate regularly, is motivated by shared interests (Naranjo-Zolotov et al., 2021). Virtual communities as a form of innovation mean utilizing virtual communities for business-oriented activities with financial transactions.

Figure 5 Virtual Community Model



Virtual community models through digital library innovation include social networks, such as Instagram, which the publishing industry manages to provide information related to digital libraries. Then, forums such as webinars held by the publishing industry with educational themes and presenting participants with interests or roles in the field of education. Then chat is provided on the website or digital library application to increase the chances of users interacting with each other between users and publishers. Finally, groups that can be formed by the publishing industry, such as article writing groups for teachers or book writing groups, will then be published and sold in applications. The presence of the virtual community can increase consumer loyalty.

Facing market dynamics due to digital transformation, PT Tiga Serangkai separates market and consumer segments according to the target digital products offered. The company produces school books in two versions, namely print and digital. Printed book products are equipped with video learning materials.

"Inevitably have to develop a digital publishing division. Therefore, in our company we develop the development of printed books, printed content materials, now we transform into digital form, both digital as *reading books* and *interactive books*," (SS – Tiga Serangkai Representative, June 8, 2022).

In addition, the company provides various trainings or workshops related to the digitalization of education today. Another digital breakthrough made is to develop a digital library application (*e-library*) called Perpuskita. The digital application allows students to borrow books online just by registering an account.

Tiga Serangkai responds to digital transformation by creating schemes offered to consumers in the Central Java Province. There are several scenarios of additional facilities prepared by Tiga Serangkai Publishers for e-book products. The first is an interactive e-book that is designed not only for printed books that are converted to digital, but also with additional facilities that are not found in ordinary e-books. These additional facilities are the scribble feature, practice questions that can be done directly on the e-book and answer keys that will also be directly included, images and short animations on each material. Second,

learning videos that contain a complete explanation of the material in the e-book in the form of videos. In the additional offer of facilities as above, consumers are given 3 choices of prices that are willing to be paid for the facilities obtained with nominal determination based on interview data from the production of Tiga Serangkai Publishers, which is IDR 100,000; IDR 150,000; and IDR 200,000.

Table 1 E-Book Quality And Price Improvement Scenarios

Product	Feature product	Price (IDR)
Interactive e-book	The e-book features notes, practice questions that can be done directly and with an answer key	100.000
Interactive e-book + video	Interactive e-book accompanied by video explanation of the material in fullp & animated images.	150.000
Interactive e-book + video + e-course and educational game	interactive e-books with educational videos and games, & online courses on LMS are provided	200.000

Schools are divided into 2 categories based on the level of authority or purchasing discretion (ownership) and based on the level of economic income (purchasing power). Based on the level of authority or purchasing discretion, it is divided into public schools and private schools, while based on purchasing power it is divided into private and middle up and private and middle low.

Researchers used the Theory Acceptance Model (TAM) to determine the determinants of acceptance of innovations carried out by publishing companies facing changes in the digital economy in the field of education. This theory is to explain individual acceptance of the use of information technology systems.

Researchers used 3 indicators to measure the determinants of respondent acceptance. These variables are innovativeness which relates to the extent to which respondents are happy to experiment with the use of technology, optimism which is a positive view of respondents related to the benefits of technological innovation publishing companies, ease of use which is the respondent's view related to the convenience offered by technological innovation.

Logit regression is used to determine the effect of these 3 variables on respondents' acceptance. Logit regression is used because the dependent variable, respondent acceptance, scales dichotomy (receiving and not receiving).

Table 2 Logit Regression Results

X1 (Innovativeness)	0.005 (0.995)
X2 (Optimism)	1.4* (0.006)
X3 (Ease of Use)	0.6 (0.183)

The variable that has a significant effect with a probability of $0.006 < 0.1$ (level of significance) is only the Optimism variable with an odds ratio of 1.4, so it can be interpreted that the usefulness of innovations made by publishing companies has an influence of 1.4 times in the acceptance of product innovation. While the other 2 variables, namely Innovativeness and Ease to Use did not have a significant effect. So it can be

concluded that the most important thing about publishing company innovation is the benefits brought by these innovations for respondents (schools).

The contemporary book business is globalized and digitized (Steiner, 2018). Especially in the post-pandemic period, digital technology empowered by new products, new services, new business forms and new business models in various industries, including the education sector, will be an important factor that will have an impact on economic growth and encourage a circular economy in a country (Jiang, 2020). Similarly, the school book market in Indonesia also experienced a shift when there was a digital transformation in the field of education.

Tiga Serangkai has been adaptive to digital transformation. The company is experiencing shifts in production, distribution and consumption patterns, and products (conventional to digital) from school books. The school book market circle in Indonesia will be a strong opportunity for any publishing company that has a strong relationship with the government and has a strong business modality.

The purchase of e-books by schools increased dramatically during the pandemic where massive online learning was carried out in line with restrictions on community activities. A good e-book collection development policy helps to obtain quality e-books at minimal cost with the most suitable terms and conditions and have an effective access mechanism. However, to be effective, the e-book collection development policy needs to be revised periodically. The type and size of the library needs to be considered when revising the e-book collection development policy (Kumbhar, 2018).

Discussion

Digital transformation in education has significant technical implications for school and teacher readiness so that digital-based learning can occur optimally. The preparedness of digital facilities and infrastructure is essential in supporting smooth online learning. It is evidenced by the situation of online education in Saudi Arabia, where part of the infrastructure for e-learning was established before the pandemic. Many educational platforms and resources are suitable for distance learning, including adaptive learning platforms, supporting educational materials that include interactive technology, and assessment platforms (Bawa, 2021). In addition, technology skills for teachers and students will significantly determine the smooth online learning process. Online teaching is a challenging task where a teacher must be skilled and competent enough to play different roles besides teaching (Baber, 2021). As teachers become more experienced in online teaching, the efficiency of online teaching will increase and become sustainable as an appropriate training method through online facilitated learning communication (Goudenhooff et al., 2022). Integrasi teknologi digital dalam proses pengajaran perlu dilakukan melalui peran yang lebih aktif dalam pengembangan keterampilan digital siswa maupun guru serta ketersediaan sumber daya pendidikan online (Lopes et al., 2022). Problems regarding digital facilities or infrastructure will be an obstacle that hinders as experienced by underdeveloped countries where most students cannot access the internet (Adnan & Anwar, 2020). The disadvantage of online learning accelerated with the conditions of the covid 19 pandemic. On the other hand, fatigue and boredom become problems in the context of sudden changes from daily activities to online activities (for example, interpersonal interaction and communication are paralyzed due to new mediation provided by special devices) (Goudenhooff et al., 2022).

On the other hand, publishing companies must innovate digital products under the applicable curriculum (Magadán-díaz & Rivas-garcía, 2018). Publishers understand the need to consider the volume of new work, the cost consequences incurred to best work on workflows, time and processes, and the most cost-effective way to implement accessibility in their business processes (Montoya, 2022). The constraints companies face in the form of a lack of technical innovation indicate a lack of investment in knowledge-based technological resources, which hinders the digital transformation process of the company's economy (Profile, 2018).

Conclusion

Digital transformation in education has significant technical implications for school and teacher readiness so that digital-based learning can occur optimally. The preparedness of digital facilities and infrastructure is essential in supporting smooth online learning. It is evidenced by the situation of online education in Saudi Arabia, where part of the infrastructure for e-learning was established before the pandemic. Many educational platforms and resources are suitable for distance learning, including adaptive learning platforms, supporting educational materials that include interactive technology, and assessment platforms (Bawa, 2021). In addition, technology skills for teachers and students will significantly determine the smooth online learning process. Online teaching is a challenging task where a teacher must be skilled and competent enough to play different roles besides teaching (Baber, 2021). As teachers become more experienced in online teaching, the efficiency of online teaching will increase and become sustainable as an appropriate training method through online facilitated learning communication (Goudenhooff et al., 2022). Integrasi teknologi digital dalam proses pengajaran perlu dilakukan melalui peran yang lebih aktif dalam pengembangan keterampilan digital siswa maupun guru serta ketersediaan sumber daya pendidikan online (Lopes et al., 2022). Problems regarding digital facilities or infrastructure will be an obstacle that hinders as experienced by underdeveloped countries where most students cannot access the internet (Adnan & Anwar, 2020). The disadvantage of online learning accelerated with the conditions of the covid 19 pandemic. On the other hand, fatigue and boredom become problems in the context of sudden changes from daily activities to online activities (for example, interpersonal interaction and communication are paralyzed due to new mediation provided by special devices) (Goudenhooff et al., 2022).

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The results showed that PT Tiga Serangkai are able to adapt and be able to respond to the needs of digital transformation. The innovation of book printing companies received a positive response from users. The publishing industry in Indonesia has great potential to grow. The technological transformation that is present as a result of the industrial revolution 4.0 which is strengthened by the presence of the Covid-19 pandemic and millennials who become digital natives, is a great opportunity as well as an encouragement for publishing industry players to be able to transform into the digital world by publishing books in electronic form and utilizing online platforms in marketing and producing booksellers. In making innovations, Tiga Serangkai as school book publisher companies need to consider the benefits of technological innovation developed.

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