JOURNAL OF WORLD SCIENCE
https://jws.rivierapublishing.id/index.php/jws
Volume 2 No. 12 December 2023
P-ISSN: 2828-8726
E-ISSN: 2828-9307

THE EXPLORATIONAL ANALYSIS OF THE DIGITAL TRANSFORMATION CHALLENGES IN THE FRESHWATER FISHERIES INDUSTRY IN CENTRAL JAVA PROVINCE THROUGH GROUP CONCEPT MAPPING: A DIGITAL BUSINESS ECOSYSTEM PERSPECTIVE

Shinta Kusuma Wardhani[1], Siska Noviaristanti[2]
Universitas Telkom, Jawa Barat, Indonesia

shintatakusuma@student.telkomuniversity.ac.id[1], siskamarhen@telkomuniversity.ac.id[2]

ABSTRACT
This research explores the perspective of the challenges of digital business ecosystem players who utilize digital technology in the freshwater fisheries industry in Central Java. Methodology Obtained from ecosystem actor informants through interviews. This research falls under the mix method criteria where qualitative challenge analysis is carried out from triple helix sources (government, universities and industry) which produces challenge clusters so that they are qualitative in nature. natural. in nature. Research can be carried out on SME respondents using number 8. These SMEs assess clusters based on what they face and the obstacles that exist in their industry. Through this mixed method more comprehensive results were obtained, validating the challenge statement. The results of the research show critical clusters that are important and deserve attention for assessing the current situation through quadrant distribution graphs, namely Attitudes and SME Business Actors in Utilizing Digital Business Technology, Business Actors' Mindsets towards Digital Business Technology, Evaluation of Government Support, and Business Readiness Technology Digital. thus creating change for the better as a form of future strategy that is neater and more distributed according to the needs of the actors. Research implications: Data collection using interviews with the group concept mapping method limits researchers in confirming results and invites grouping of collected challenge statements so that the GCM method is not recommended for small studies. In addition, the greater the number of respondents, the more valid the results are for various SME conditions.

Keyword: exploratory analysis, digital transformation, digital technology challenges, group concept mapping.

Corresponding Author: Shinta Kusuma Wardhani
E-mail: shintatakusuma@student.telkomuniversity.ac.id

INTRODUCTION

Indonesia is one of the largest archipelago countries with a very strategic maritime sector. Since being named the future of world fisheries, Indonesia's fisheries subsector continues to be in the spotlight (Anna, 2020). The agriculture, plantation and fisheries sectors are a mainstay for Central Java Province in improving welfare, absorbing labor and improving community nutrition. Central Java Province has extraordinary potential in the fisheries sector. The total volume of captured fisheries is in 8th place nationally at 274,469 tonnes with a value of IDR 8.75 trillion. As for aquaculture, Central Java is in 5th place with a total volume of 485,689 tons with a value of 10.32 trillion. The potential for fisheries resources in the province is still very large, but the challenges are no less large (Notohamijoyo, 2019).

Reporting from Suara Merdeka (2021), one of the potential industries is fisheries, which is quite large and every year its production continues to increase. As Central Java's infrastructure develops, information technology also has the opportunity to increase market access for Central Java

fishery products to various regions in Indonesia and abroad. The development of e-commerce businesses followed by the emergence of technology-based start-ups which are growing rapidly in Indonesia is supporting the development of market access for fishery products in Central Java. This will encourage development in other sectors such as tourism services, creative economy and others and support the development of Central Java as a national fisheries giant (Notohamijoyo, 2019).

In the 2018-2013 Strategic Plan of the Central Java Provincial Maritime and Fisheries Service, maritime and fisheries development in Central Java is directed at optimizing the management and sustainable use of natural resources, increasing fisheries productivity and production, expanding employment opportunities, supporting the increase in non-oil and gas exports and increasing consumption of fishery products (J.T.DKP, 2021). Quoting Yanti (2014) in the Indonesia Sustainable Aquaculture Seminar between the Ministry of Maritime Affairs and Fisheries (KKP) and the Government of Norway, that the development of the fisheries sector requires a management system with a regional approach through the principles of integration, efficiency and involvement of stakeholders, related institutions that support cultivation to create acceleration. economy.

There are many online markets supported by the convenience provided from flexibility of location to marketing which has been processed using a logarithmic system. This is supported by the number of e-commerce users which continues to increase and is predicted from statistical report data by tempo data to reach approximately 189,600,000 in 2024 (Christy, 2020). Massive transformation provides fast and cheap accessibility with its centralized computing design (Herman, 2022). Overcoming digital technology problems in the transformation process, a company needs to develop ways to access strategic technology partnership capabilities that can form a complex series of capabilities that complement each other starting from digital exploitation learning, organization, network formation, cooperative alliances, and digital technology expertise (Kilubi & O'Regan, 2016). A digital transformation strategy functions as a central concept in integrating all coordination, priorities and implementation within a company (Matt, C., Hess & Benlian, 2015).

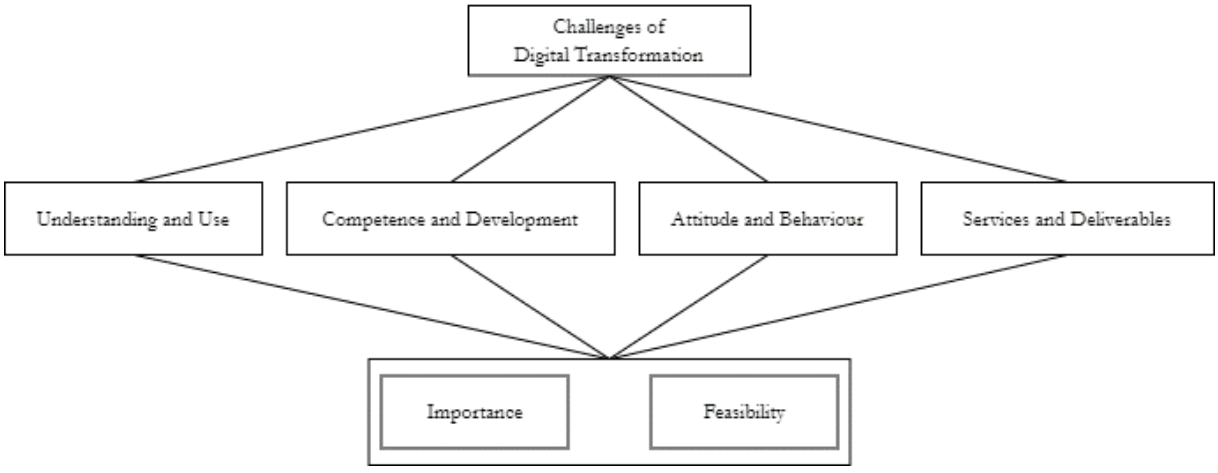
Digital transformation in Small and Medium Enterprises (SMEs) in Pelletier & Cloutier, (2019) raises many perceptions regarding IT problems, especially seen from the perspective of the digital business ecosystem which plays a major role in business processes. Digital transformation occurs as a result of the increasingly submerged traditional service ecosystem where SMEs have a lot of access to digital technology applications, some of which may be free but are not free from usage concerns. McKinsey research (2019) presented by Rizkinaswara (2021) explains that the things that are the biggest obstacles to digital transformation are culture and behavioral challenges which are still in a fixed mindset by feeling satisfied with what is currently obtained. So you need higher education to change it into a growth mindset which continues to try to get the best results.

The failure of digital transformation is caused by a mismatch in the integration of resources between actors during exchanges whose coordination is based on the "rules of the game" shared by the actors themselves without any starting points for other actors (Vargo & Lusch, 2016). SMEs are part of the freshwater fisheries industry which the government continues to strive to improve people's welfare in a sustainable manner. The research is focused on the strategy formulation stage through evaluating the conditions that are already running on the transformation in the application of digital technology for the benefit of the sustainability of digital transformation.

Based on the background that has been presented, the author is interested in highlighting the digital transformation of the fisheries industry in Central Java Province considering that there is still quite little research carried out regarding this issue by inviting discussions to channel perspectives from the industrial ecosystem to determine the level of influence of the importance and feasibility of digital technology challenge clusters on transformation. digital. As part of the goal of achieving SDG's 2030, SMEs are part of the freshwater fisheries industry which the government continues to strive to improve community welfare in a sustainable manner. The challenges in adopting digital technology as a transformation tool are not only individual obstacles that can be completely resolved without the help of other parties. Universities and governments are built to create value for each other, in this case the freshwater fisheries sector. Universities as IT providers have deep knowledge of digital science and the government as the authority manager regions so that collaboration between government facilitators and IT professional partners is a complex process that is mutually beneficial. The research is focused on the strategy formulation stage through evaluating the conditions that are already underway in the transformation in the application of digital technology for the benefit of continuing the implementation of relevant digital transformation. Through analysis that produces challenges into an evaluation of each actor, it is hoped that it will be able to lead to agreement on a digital business ecosystem framework for the Central Java Province fisheries industry to form cooperation to minimize challenges through values between actors that are able to provide profitable benefits.

METHOD

An explanation of the thinking framework according to Polancik (2009) is a diagram that is able to explain in general the logical flow of research so that the diagrams are connected to each other.



Picture 1. Research Framework

The framework of thought above presents methodological stages based on digital transformation orientation to obtain a solution using methods to conceptualize the challenges in providing digital technology value and understand the opportunities from its availability which are divided into four sub variables. Digital transformation through the use of digital technology will run well by business people if they have the expertise to utilize digital technology (Ningrum, 2022).

Sustainability is formed through a relationship structure between organizations that is dynamic and also interdependent for sustainable business activities (Yusuf & Mansoor, 2017).

Research on Exploratory Analysis of the Digital Transformation Challenges of the Fisheries Industry through Exploratory Data, which according to the type and source of data as well as the level of analysis, is mixed methods research. This research is a combination of qualitative and quantitative. Qualitative data tends to be open ended and quantitative data, on the other hand, includes close ended because the responses have been determined (Creswell, 2016). It was stated in the PCMH Research Methods Series (2013) in (Sugiono et al., 2019) that mixed or combined methods will be more complete and synergistic in collecting and analyzing data using this method compared to separate quantitative and qualitative methods. The stages in this research include identify actors, roles, and relationship interactions; perspective on the challenges of using digital technology; mapping of challenge clusters; and the level of influence of the importance and feasibility of the challenge clusters.

RESULTS AND DISCUSSION

Obtaining an actual point of view is determined from observations on the ecosystem of the freshwater fisheries industry in Central Java Province from upstream and downstream. Compliance with the criteria of sources and respondents is taken by having a full role and having a direct relationship in the current industry. Through informants to obtain important relevant information through in-depth interviews so that it is in accordance with research needs for a comprehensive understanding of achievement and then validated through surveys with respondents.

Identify Actors, Roles, and Relationship Interactions

Table 1. Actors, Roles and Value Propositions in the Fisheries Digital Business Ecosystem of Central Java Province

Actors	Institutions	Roles	Value Propositions
University	PT Mina Nusantara Ahingani	Provider of digital business technology services	Providing a digital platform for SMEs to market and sell
			Opening cooperation with IT partners
Government	The Agency of Maritime Affairs and Fisheries of Central Java Province	Policy determinants	Adopting the fisheries sector policy of Central Java Province
		Help giver	Providing social assistance with equipment for cultivation and processing of aquaculture products
		Seed center provider	Provide fish seed for cultivation enlargement
		Fish processing UKM training organizer	Carrying out training and coaching to SMEs
	Communications and Informatics Agency of Central Java Province	IT based service provider	Create applications needed for fisheries
			Provides a domain under the government jatengprov.co.id
		Government data center manager	Integrating into the government server at diskominfo
Industry	Ulamania SMEs	Producers of fresh water fishery products	Processing and producing freshwater fish products

				Selling processed freshwater fish products		

Actors from Universities Involved

PT Mina Nusantara Ahingani is an actor who plays a role in the innovation ecosystem as an IT professional with its service product, namely the NuFish Platform on the website www.nufish.id. Putting it in the University field category because it is a company founded and initiated by alumni of Telkom University's private campus students during their studies (utilizing knowledge created at the university (Borge & Bröring, 2020) through service programs and also business incubation (the university is a source of entrepreneurship (Borge & Bröring, 2020) facilitated by the university. Universities are the main source of knowledge and the formation of innovation (Borge & Bröring, 2020).

Government Actors Involved

The Agency of Maritime Affairs and Fisheries of Central Java Province and the Agency of Communication and Informatics of Central Java Province are actors who act as regulatory and authority ecosystems in implementing digital transformation programs within the Province. The principle of all agencies in the location government is to collaborate with each other like the Maritime Affairs and Fisheries Service with the Communication and Informatics Agency. The relationship with UKM is more with the Department of Maritime Affairs and Fisheries which fosters business actors in the service sector, namely in this research fisheries are UKM processed freshwater fish. This is consistent with the intention of Etzkowitz (2016) that government actors play the main role in supporting interactions and exchanges between sectors and sponsors to develop new knowledge, technology and innovation (Borge & Bröring, 2020).

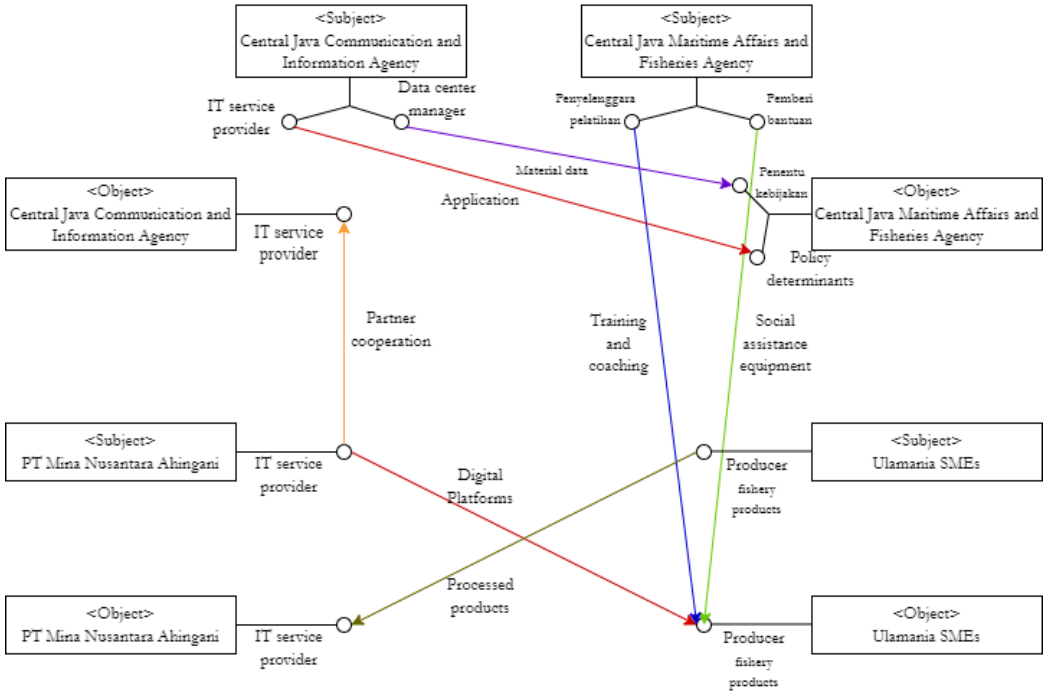
Actors from the Industries Involved

UKM Ulamania is an actor that acts as a business ecosystem as a business professional with its products, namely processed fresh water fish. SMEs in the ecosystem play a large role of economic and social growth with regard to well-being (Leso et al., 2023). The potential of SMEs that are able to enter into opportunities to become capital in the economic development ecosystem (Ekon, 2023). This opportunity can develop well with the manifestation of (Borge & Bröring, 2020) related to small business being one part of a healthy industry.

Table 2. Interaction between Actors and Objects in the Digital Business Ecosystem Fisheries of Central Java Province

Actor (Original Subject)	Role	Interaction Material	Color code	Role	Actor (Destination Object)	Reference
PT Mina Nusantara Ahingani	Provider of digital business technology services	Digital platforms		Producer of freshwater fisheries products	Ulamania SMEs	Based on the assumptions of researchers from the interview results
		Partner collaboration		IT based service provider	Communications and Informatics Agency of Central Java Province	

Actor (Original Subject)	Role	Interaction Material	Color code	Role	Actor (Destination Object)	Reference
The Agency of Maritime Affairs and Fisheries of Central Java Province	Help giver	Social assistance equipment		Producer of freshwater fisheries products	Ulamania SMEs	
	Organizer of fish processing UKM training	Training and coaching		Producer of freshwater fisheries products	Ulamania SMEs	
Communications and Informatics Agency of Central Java Province	IT based service provider	Application		Organizer of fish processing UKM training	The Agency of Maritime Affairs and Fisheries of Central Java Province	
	Government data center manager	Material data		Policy determinants	The Agency of Maritime Affairs and Fisheries of Central Java Province	
Ulamania SMEs	Producer of freshwater fisheries products	Processed freshwater fish products		Provider of digital business technology services	PT Mina Nusantara Ahingani	



Picture 2. Mapping of Fisheries Digital Business Ecosystem Interactions in Central Java Province

Perspective on The Challenges of Using Digital Technology

Understanding challenges is seen from four sub-variables as sub-variables that are of concern in identifying challenges so that they are not missed or missed. First, understanding and using digital technology is a reason that increases interest in using digital technology so that the statement of the idea of a challenge is the opposite, which makes actors less interested in digital technology. Second, competence and development using digital technology is a standard or criterion for readiness to use digital technology where the challenge is the lower standard of using digital technology. Third, attitudes and behavior using digital technology reflect the user's mindset so that the challenge is ownership and satisfaction in using digital technology. The final indicator, services and delivery on digital technology are related to business flow starting from material capital in business and digital technology, physical, regulatory, as well as capital sharing or collaboration to cover initial needs. The four sub-variables are only used for identification, apart from continuing the stages by regrouping the stages into more related cluster titles.

Table 3. Profile of Research Sources

Aktor	Lembaga	Alamat Lembaga	Nama Narasumber	Jabatan
University	PT Mina Nusantara Ahingani	Ponggok Rt.02 Rw. 01 No.30, Kec. Polanharjo, Kabupaten Klaten, Jawa Tengah 57474	Natasya Kusuma Putri, S.T.	Chief Operating Officer
Government	The Agency of Maritime Affairs and Fisheries of Central Java Province	Jl. Imam Bonjol No.134, Sekayu, Kec.Semarang Tengah, Kota Semarang, Jawa Tengah 50131	Dina Mayasari, S.Pi., M.Si.	Quality Development & Product Diversification Logistics Sub Coordinator
	Communications and Informatics Agency of Central Java Province	Jl. Menteri Supeno I Semarang, Mugassari, Kecamatan Semarang, Semarang Selatan, Kota Semarang, Jawa Tengah 50243	Thoriq Arsyadani, S.Kom.	System Development Division
Industry	Ulamania SMEs	Jl.Payung Asri I No.11, Pudakpayung, Kec.Banyumanik, Kota Semarang, Jawa Tengah 50265	Dwi Hartati	Business Owner

The identified challenges are aspects related to the capacity of actor institutions to innovate, take risks, organize and reorganize social and economic resources to change situations for profit, learn from mistakes, and survive before uncertainty becomes a digital transformation dilemma (Leso et al., 2023). The following is a summary of all challenge statements apart from the four sub-variable indicators used as in-depth interview boundaries:

Table 4. Challenges of Adopting the Use of Digital Technology Services

Sub-Variable	Challenges	Actor's Perspective
Understanding and using digital technology	Business plans that have not been fully resolved with technology	PT Mina Nusantara Ahingani
	Awareness of the importance and benefits of technology	PT Mina Nusantara Ahingani

	MSMEs and fish farmers are not yet fully familiar with digital technology	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Standard product packaging for online sales	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Product standards: distribution permit, halal, quality	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Technological development is too fast	Communications and Informatics Agency of Central Java Province
	There is still a lack of training in the use of digital technology	Communications and Informatics Agency of Central Java Province
	Do not master the technicalities of using e-commerce	Ulamania SMEs
Competence and development using digital technology	Time management develops technology following trends	PT Mina Nusantara Ahingani
	Human resources are not yet fully met	PT Mina Nusantara Ahingani
	The training education is only verbal, not technical or hands-on	The Agency of Maritime Affairs and Fisheries of Central Java Province
	There are still many steps before the use of digital technology that have been passed	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Not mastering the practice of using digital technology	Communications and Informatics Agency of Central Java Province
	Not ready/able to follow the use of digital technology	Communications and Informatics Agency of Central Java Province
	Training and mentoring does not teach the technical use of e-commerce	Ulamania SMEs
Attitudes and behavior using digital technology	Trust in technology	PT Mina Nusantara Ahingani
	Fix your mindset or feel satisfied with your current sales achievements	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Rapid technology change	Communications and Informatics Agency of Central Java Province
	Cost limitations	Communications and Informatics Agency of Central Java Province
	Technology understanding awareness	Communications and Informatics Agency of Central Java Province
	Third parties who help SMEs close SMEs' access to digital trials	Ulamania SMEs
Services and delivery on digital technology	Network and server security	PT Mina Nusantara Ahingani
	Partner trust	PT Mina Nusantara Ahingani
	E-commerce does not fully support processed fish products	The Agency of Maritime Affairs and Fisheries of Central Java Province
	Internet infrastructure is inadequate	Communications and Informatics Agency of Central Java Province
	Data security	Communications and Informatics Agency of Central Java Province
	Lack of IT HR	Communications and Informatics Agency of Central Java Province
	Admission and community cooperation	Communications and Informatics Agency of Central Java Province
	Dependence on third parties/partners	Communications and Informatics Agency of Central Java Province
	Product licensing has not yet met mass or online sales	Ulamania SMEs

	Availability of capital for the means of production	Ulamania SMEs
	Expedition does not yet support long-distance product sales	Ulamania SMEs

Mapping of Challenge Clusters

The pile of challenges is sorted into several groups in view of their close relationship with each other. After all the challenges are placed with other related challenges, each group or cluster is given a name based on the theme of the characteristics of all the challenges in the group and draws its inferences from the interpretation of the sorting agent (Pelletier & Cloutier, 2019). Disclaimer for the grouping process is not done computationally with the system in order to get more definite results because the amount of data does not meet the minimum (appendix 5) so that the process is carried out by content analysis which consists of three stages, namely: (1) data reduction by summarizing, choosing things -main things, focusing on important things, looking for themes and patterns; (2) data display which is presented in tabular order so that it is easy to understand; (3) drawing conclusions or drawing conclusions which in this study are based on the re-approval of all sources (Rozali, 2022). The four resource persons agreed on the relevance of the challenge statements for each cluster and agreed on the naming of each cluster. The description of the four clusters is as follows:

Digital business technology readiness

The first cluster is aimed at the challenges faced by IT professionals who continue to strive to provide innovation in providing technological services in the fisheries sector. Challenges were identified both from statements submitted by IT professional sources and from other external sources regarding the acceptance of the technology used. The challenge relates to the measurement of the other two actors, namely how technology can continue to be consistent with business goals (Pelletier & Cloutier, 2019). There are 9 challenge statements in this cluster, including:

1) A business plan that has not been completely resolved with technology
2) Standard product packaging for online sales
3) Time management develops technology following the trend
4) Network and server security
5) E-commerce does not fully support processed fish products
6) Partner trust
7) HR has not been completely fulfilled
8) Expeditions do not yet support remote product sales
9) Data security

SME mindset towards digital business technology

The second cluster with the keyword SME mindset is a matter of satisfaction. SMEs often achieve mixed results because IT value creation is much more difficult than SMEs themselves anticipate to pivot (Pelletier & Cloutier, 2019). Challenges in this case need to be resolved by preparing the competence of SME entrepreneurs who are expected to be able to change mindsets and increase productivity towards digitalization within their SMEs (Nanda & Fitryani, 2022). There are 7 challenges included in this cluster, including:

1) Awareness of the importance and benefits of technology
2) Technological development is too fast
3) Trust in technology
4) Fix mindset or feel enough with current sales achievements
5) Rapid technological change
6) Cost limitations
7) Awareness of understanding technology

Attitudes and efforts of SMEs using digital business technology

Third, on the attitudes and efforts of SME actors, SMEs need to develop and/or access strategic technology partnership capabilities that form a series of complex capabilities related to: complementarity; learning and exploitation; organizational elements; networks, alliances and partnerships, as well as technological, innovative and internal expertise (Pelletier & Cloutier, 2019). The most identified challenges in this cluster with a total of 10 statements include:

1) SMEs and fish farmers are not fully familiar with digital technology
2) Product standards: distribution permit, halal, quality
3) Not mastering the technicalities of using e-commerce
4) There are still many steps before the use of digital technology that has been skipped
5) Does not master the practice of using digital technology
6) Not ready/able to follow the use of digital technology
7) Lack of IT human resources
8) Product licensing has not complied with mass or online sales
9) Availability of capital for production equipment
10) Internet infrastructure is inadequate

Evaluate government support

The fourth cluster dominates the challenges that arise over the performance of the government where the government acts primarily as a supporter of interactions and exchanges between sectors and sponsors to develop new knowledge, technology and innovation (Etzkowitz, 2016). There are 6 structured challenges here, including:

1) There is still a lack of training in the use of digital technology
2) Only verbal training education, not technically or directly trying
3) Training and mentoring do not teach the technical use of e-commerce
4) Third parties that help SMEs close access for SMEs to try digital
5) Collaboration between admissions and the community
6) Dependence on third parties/partners

Next, using the quantitative exploratory analysis stage, the data will be more validated and have weight with a direct assessment by UKM Fish Processing in Central Java Province to obtain a measure of the perceived importance and feasibility of the challenge through a survey that has been provided by the researcher with preliminary questions to find out the business identity and continue with the assessment. perceived importance and feasibility of the four groups of challenges with a Likert type scale of 1-5 (Pelletier & Cloutier, 2019). The main objective of the survey is to assess clusters of challenges by SMEs to obtain estimates of which clusters of challenges influence the

success of digital transformation so that they become important and worthy of attention and completion so that they become recommendations and policy plans that can be given to related fields for each actor (Borge & Bröring, 2020).

2. SME name

8 Respons

ID ↑	Nama	Respons
1	anonymous	UD.putra bahari
2	anonymous	Barokah Zee
3	anonymous	Shafaa Food
4	anonymous	Allysa Snack & Olahan Ikan
5	anonymous	Kembar
6	anonymous	Can Di
7	anonymous	KARMINA
8	anonymous	MAMIQU

Picture 3. SMEs for Processed Fish Products who are Respondents

Processing of assessment results is carried out using Excel software as a descriptive quantitative method. The results of the forms show that the numbers are entered into the excel table to obtain the final result which cluster gets the value from highest to lowest sorted. The results of data processing show the average and variance to be mapped in the next stage.

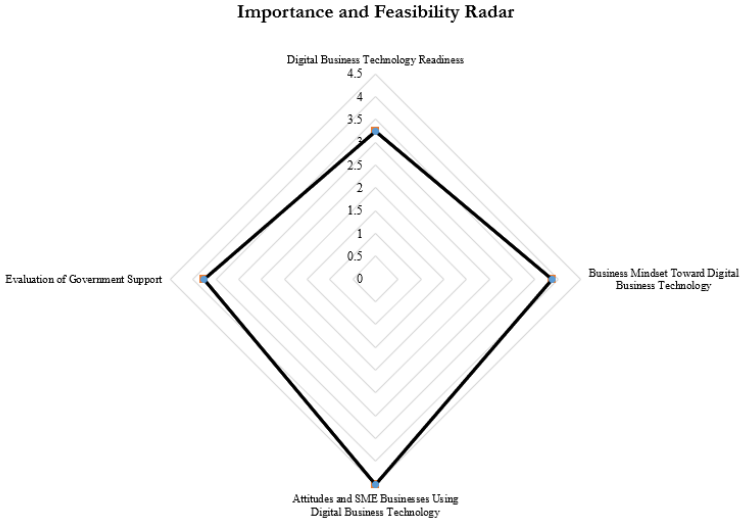
Table 5. Challenge Cluster Assessment Results by Respondent SMEs

Respondent ID	Digital Business Technology Readiness	Business Mindset Toward Digital Business Technology	Attitudes and SME Businesses Using Digital Business Technology	Evaluation of Government Support
1	3	4	5	4
2	1	2	4	2
3	4	4	4	4
4	4	4	4	3
5	2	4	5	3
6	5	5	5	5
7	4	4	4	4
8	4	4	5	5
Average	3.375	3.875	4.5	3.75
Rating	4	2	1	3
Varians	1.696428571	0.696428571	0.285714286	1.071428571

The Level of Influence of The Importance and Feasibility of The Challenge Clusters.

Survey results can find critical clusters that are important and worthy of attention. Each cluster is needed by actors to assess the current situation so as to create changes in a better direction as a form of future strategy (Antony et al., 2023). The end of the exploratory analysis in looking at the

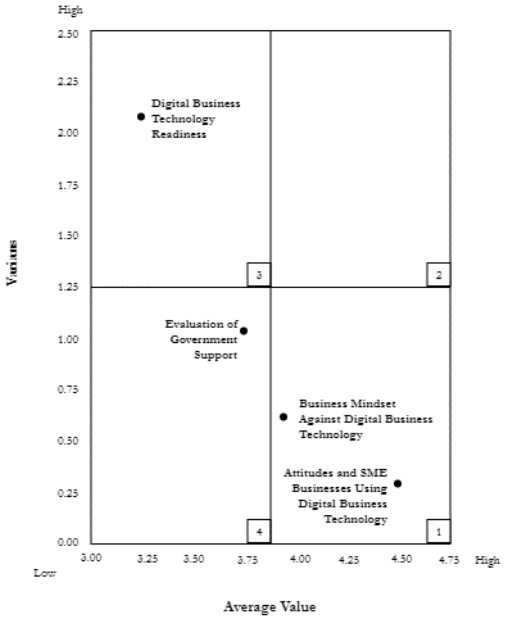
level of importance and feasibility. So that the output results from the level or sequence of challenges can be input to related parties, these are actors who are resource persons for collecting qualitative data for evaluation and future plans to continue to carry out digital transformation that is neater and distributes the needs of actors. The following are the levels obtained from ranking the average challenge scores:



Picture 4. Challenge Cluster Tier Radar Graphic

The graphic image above shows the level of challenge clusters according to the average value obtained as follows:

1. Attitudes and Efforts of SMEs Using Digital Business Technology
2. Business Mindset towards Digital Business Technology
3. Evaluation of Government Support
4. Digital Business Technology Readiness



Picture 5. Challenge Cluster Spread Graph

The distribution of the four clusters is classified into four quadrants where it becomes the actor's strategic action zone, the mean is related to feasibility the greater the number is the more appropriate while the variance is the importance the smaller the number is the more important, there is no size limit of feasibility and importance but it is a list of the most popular challenges (Pelletier & Cloutier, 2019). As can be seen in quadrant 1, there are no clusters that fall into the context of this quadrant. Quadrant 2 has two clusters namely "Business Mindset towards Digital Business Technology" and "Attitudes and Businesses of SMEs Using Digital Business Technology". The second quadrant is considered very feasible and very important. When viewed from the important and proper intent, important is the main and principal for the same purpose, while proper is what shows that if it is done or completed it will provide great benefits (Pelletier & Cloutier, 2019). So that these two clusters deserve to be criticized by all actors and are important or the main thing to resolve. If completed, it will achieve great achievements or be widely useful with the functions of the roles of all digital transformation ecosystem actors.

In contrast to the low importance due to large numbers, the thing that is of interest or is the main point is the readiness of digital business technology because it is an object used by actors in the fisheries sector in digital transformation (Quadrant 3). If the business technology does not exist or is not ready, how will the transformation take place, using what? This cluster has a low level of feasibility, but some conditions in certain clusters are important, namely IT professionals apart from joint settlements with other actors. The results of this quadrant are in line with Pelletier & Cloutier (2019) which, apart from the attention of SME respondents to this cluster, is diverted attention to other clusters, but will still be adopted and used if it suits the needs of SMEs, in this case, digital business technology business processes.

In quadrant 4, the third order result with a very feasible and important measure is from the function of the government's role which is identified as a challenge. Government support is evaluated because opening access raises several challenges from SMEs with inappropriate definitions of socio-economic functions. In line with Pelletier & Cloutier (2019) research, it is necessary to continue to monitor and measure IT needs from the side of the main SME actors by the government so that it is suitable for the long term not to experience setbacks.

CONCLUSION

In the context of identifying actors involved in the digital technology service ecosystem of the fishing industry, there are several key players with crucial roles: 1) PT Mina Nusantara Ahingani is a company that acts as a service provider for SMEs in the freshwater fishing industry, offering online store services. They assist in digital transformation by collaborating with government partners and distributors. 2) The Department of Fisheries and the Department of Communication and Informatics in Central Java are government agencies actively involved in the digital transformation of the fishing sector in Central Java Province. The Fisheries Department oversees the freshwater fishing sector and implements digital transformation programs under the supervision of the Communication and Informatics Department. 3) UKM Ulamania is one of the business entities in the processed fishery products industry in Central Java Province, receiving support from the Fisheries Department, including participation in business development programs like 'UKM Go Digital.' Challenges faced in

adopting digital technology services fall into several categories: understanding and using technology, competency and development, attitudes and behaviors, as well as services and delivery. Identifying these 32 challenges includes rapid technological advancements, lack of training in digital technology usage, insufficient awareness and understanding of technology, as well as infrastructure and data security issues.

Mapping the concept of digital technology challenges results in four main clusters focused on readiness for digital business technology, SMEs' mindset toward digital technology, SMEs' attitudes and efforts in using digital technology for business, and the evaluation of government support. Based on assessments from 8 SMEs who were respondents, SMEs' attitudes and efforts in using digital technology for business show the highest level of feasibility with an average score of 4.5.

The level of influence and feasibility of digital technology challenge clusters highlight three crucial and worthy-of-attention clusters: SMEs' attitudes and efforts in using digital technology for business, SMEs' mindset toward digital technology for business, and readiness for digital business technology. The cluster evaluating government support is also a focal point, signifying the importance of government support in the digital transformation of the fishing industry..

REFERENCES

Anna, Z. (2020). *75 tahun merdeka, Indonesia masih punya banyak potensi kembangkan sektor kelautan dan perikanan*.

Antony, J., Sony, M., & McDermott, O. (2023). Conceptualizing Industry 4.0 readiness model dimensions: an exploratory sequential mixed-method study. *TQM Journal*, *35*(2), 577–596. https://doi.org/10.1108/TQM-06-2021-0180

Borge, L., & Bröring, S. (2020). What affects technology transfer in emerging knowledge areas? A multi-stakeholder concept mapping study in the bioeconomy. *Journal of Technology Transfer*, *45*(2), 430–460. https://doi.org/10.1007/s10961-018-9702-4

Christy, F. E. (2020). *Prediksi Angka Pengguna E-commerce di Indonesia 2024 - Data Tempo.co*.

Creswell, J. W. (2016). *Research Design*.

DKP, J. T. (2021). Rencana Stretegis Dinas Kelautan dan Perikanan Provinsi Jawa Tengah 2018-2023. *Nuevos Sistemas de Comunicación e Información*, 2013–2015.

Etzkowitz, H. (2016). *The Triple Helix*. 1–23.

Herman, R. T. (2022). *Budaya Digital*.

Humas Ekon. (2023). *Menko Airlangga: Potensi UMKM Menjadi Modal Dalam Ekosistem Pengembangan Ekonomi - Kementerian Koordinator Bidang Perekonomian Republik Indonesia*.

Kilubi, I., & O'Regan. (2016). Strategic technology partnering capabilities: A systematic review of the empirical evidence over two decades. *Journal of Strategy and Management*.

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: a mixed-methods approach. *Cognition, Technology and Work*, *25*(1), 151–179. https://doi.org/10.1007/s10111-022-00714-2

Matt, C., Hess, T., & Benlian, A. (2015). *Digital Transformation Strategies. Business and Information Systems Engineering*.

Nanda, A. S. N., & Fitryani, F. (2022). Peningkatan Digital Skill Dan Networking Umkm Paper Core Berbasis Media Sosial Pada Masyarakat Desa Tanggungan Timur Sidoarjo. *Seminar Nasional Teknologi Dan Multidisiplin Ilmu (SEMNASTEKMU)*, *2*(1), 149–160.

https://doi.org/10.51903/semnastekmu.v2i1.165
Ningrum, H. F. (2022). *Bisnis Digital* (Issue July).
Notohamijoyo, A. (2019). *KKP | Kementerian Kelautan dan Perikanan*.
Pelletier, C., & Cloutier, L. M. (2019). Conceptualising digital transformation in SMEs: an ecosystemic perspective. *Journal of Small Business and Enterprise Development*, *26*(6–7), 855–876. https://doi.org/10.1108/JSBED-05-2019-0144
Polancik, G. (2009). *Empirical Research Method Poster*.
Rizkinaswara. (2021). *Soal Roadmap Digital Indonesia, Ini Penjelasan Menkominfo - Wahana News*.
Rozali, Y. A. (2022). Penggunaan Analisis Konten Dan Analisis Tematik. *Penggunaan Analisis Konten Dan Analisis Tematik Forum Ilmiah*, *19*, 68.
Suara Merdeka. (2021). *Potensi Perikanan di Jateng Cukup Besar, Pertamina Jamin Ketersediaan BBM Industri Berkualitas - Suara Merdeka*.
Sugiono, E., Efendi, S., & Sumardi, R. (2019). *Peran inovasi sebagai mediasi hubungan antara modal intelektual dengan keunggulan bersaing ukm*.
Vargo, S. L., & Lusch, R. F. (2016). Institutions and axioms: an extension and update of service-dominant logic. *Journal of the Academy of Marketing Science*, *44*(1), 5–23. https://doi.org/10.1007/S11747-015-0456-3
Yanti, S. (2014). *Kajian Strategi Pengelolaan Perikanan Berkelanjutan*.
Yusuf, I. Y., & Mansoor, A. Z. (2017). *Indonesia Boardgame ' S Ecosystem Mapping*. *January 2017*, 275–280.