






Critical Success Factors for Implementing E-business on Logistic and Forwarding Businesses in Bali

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Abstract. Tourism logistics is a characteristic of logistics businesses in Bali. The Indonesian Logistics and Forwarding Association (ILFA) Bali consisted of 98 logistics and forwarding companies. Because of the importance of implementing e-business while the phenomenon that not all business processes have successfully implemented e-business, this research aimed to develop a Critical Success Factor (CSF) framework for implementing e-business in logistics and forwarding businesses in Bali. This research carried out a qualitative content analysis consisted of data collection stages, coding frame creation, data coding, data analysis, data visualization, and evaluation. The coding frame was created based on the TOE (Technological, Organization, Environment) framework which has been mapped from TARIM (Technology Acceptance Method and Technology Readiness Index), cost barriers, and e-commerce collaboration variables. In content analysis, frequency calculations are carried out from coding data. The finding was the CSF framework has been formed with 2 indicators criteria, namely key indicators and supporting indicators. Key indicators consisted of Network Facilities, Technology Acceptance & Readiness, and Management Commitment. Supporting indicators consisted of Benefits for Organization, Distribution Channel, and Scalability. In more detail regarding the Technology Acceptance & Readiness indicators, there were several critical factors, namely Staff Skill & Expertise, Partner & Customer Trust, Technical Cost of ICT Equipment, Customer Satisfaction, and Data & System Security. It can be concluded that the proposed framework can be used as a reference in planning e-business development for logistics and forwarding businesses, by paying attention to key indicators and supporting indicators.

Keywords: Critical Success Factors, E-Business, Logistics and Forwarding

1 Introduction

Tourism logistics is a characteristic of logistics businesses in Bali. This is in line with the tourism business which is the lifeblood of the island of Bali. E-business technology provides opportunities for the world of business and industry including logistics and forwarding businesses to carry out innovations. The implementation of e-business,

especially in Indonesia, is increasingly growing. Various business activities have been assisted by e-business, such as reservation activities, procurement, buying and selling, public services, education, marketing, production and distribution. The best practice in implementing e-business in the business world, namely research by Pallathadka et al. (2023) was applying artificial intelligence to business management, e-commerce, and finance. Research by Wang et al. (2020) described marketing innovation through e-commerce in dealing with Covid-19. Research by Panayiotou et al. (2021) focuses on researching Government to Business (G2B) e-services. Research by Labanauskaitė et al. (2020) used e-marketing as a means of communication in the tourism industry. Research by Dewi et al. (2022) and K. C. Dewi & Ayuni (2021) also stated that the digital economic model can be utilized by MSMEs to adapt to change.

Previous research regarding matters that influence a company's e-business orientation, including research by Al-Omouh (2022) stated that human capital, structural capital, and relational capital have a positive influence on e-business entrepreneurial orientation. Research by Lu et al. (2023) used the technology acceptance model (TAM) and DeLone and McLean (D&M) information system success model (ISSM) as a framework for identifying relevant factors. Adaptation and success of companies in running e-business/e-commerce have also been carried out (Almtiri et al. 2023; Eze et al., 2021a; Hossain et al., 2022; Kamariotou et al., 2021; Lu et al., 2023; Mkansi, 2022; Nurcahyo & Putra, 2021; Siby & George, 2022; Yang et al., 2023). Acceptance and readiness for the digital economy especially in e-business, from the MSME and government side has been researched by K. C. Dewi & Ayuni (2020a, 2020b). The TARIM model in research by K. C. Dewi & Ayuni (2020a) discussed the factors that influence acceptance and readiness for e-business adaptation.

The Indonesian Logistics and Forwarding Association (ILFA) Bali consists of 98 logistics and forwarding service companies. Not all business processes in these companies have used e-business in their operations. In fact, through e-business companies can gain important insights and simplify work operations. Digitalization in the logistics services industry is certainly becoming increasingly important. Through e-business, companies can obtain important insights such as in research by Dewi et al. (2022) regarding salesperson performance modeling based on sales data clustering. Research by Tan & Ejlal (2023) found that the quality of e-business websites influenced customer satisfaction.

Specifically, digitalization in the logistics services industry is increasingly strategically important because it impacts existing paradigms, business models, and industry boundaries (Chung, 2021; Herold et al., 2021; Mikl et al., 2021; Tiwari et al., 2023). The phenomenon was there's not all business processes in logistics and forwarding had successfully implemented e-business. Moreover, the business company did not have a framework for implementing e-business. Therefore, this research aimed to develop a Critical Success Factor (CSF) framework for implementing e-business in logistics and forwarding businesses in Bali.

2 Methodology

This research is carried out using a qualitative content analysis research approach which consists of data collection stages, coding frame creation, data coding, data analysis, data

visualization, and evaluation. Data collection techniques included observation, literature study, qualitative surveys, and focus group discussions. Observations and surveys were carried out at the research location, namely the logistics and forwarding business in Bali. The number of samples in the survey used a snowball sampling technique. Literature study through online searches with publish or perish software. The focus group discussion invited stakeholders (logistics and forwarding entrepreneurs) and also experts.

The coding frame was created based on the TOE (Technological, Organization, Environment) framework which has been mapped from the TARIM variables (K. C. Dewi & Ayuni, 2020a), cost barriers (Mkansi, 2022) and e-commerce collaboration (Nurchahyo & Putra, 2021). The software used in this research is NVIVO software. In content analysis, frequency calculations will be carried out from coding data. From the results of the analysis and data interpretation (visualization), a CSF Framework for the E-business Implementation in Logistics and Forwarding Businesses in Bali was created. The resulting framework was then evaluated through focus group discussions. The CSF indicators that were used in this research proposal as in Figure 1 which is mapping cost barriers, e-commerce collaboration, and TARIM to the TOE framework.

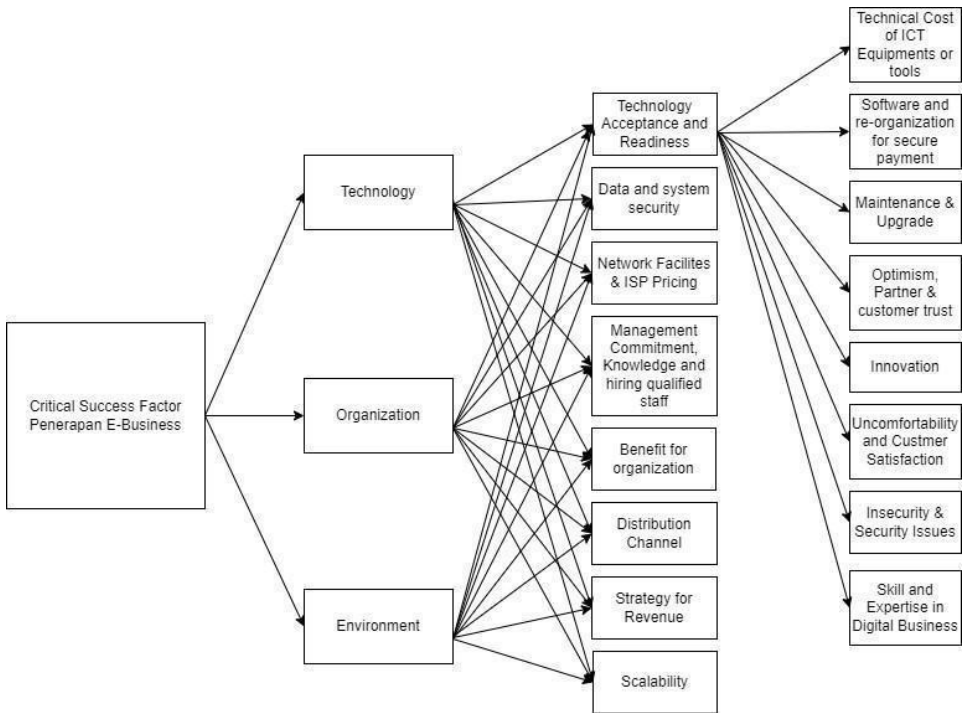


Figure 1. CSF indicators of E-business implementation

3 Result and Discussion

3.1 Result

Based on the data collection that has been carried out with indicators as in Figure 1, the findings obtained as in Table 2. Table 1 describes the sentiment analysis results obtained through the NVIVO software. It can be seen that the Optimism, Partner & Customer Trust indicators received the highest positive sentiment, followed by maintenance & upgrade, and innovation indicators. Negative sentiment was obtained by indicators regarding Security, Uncomfortability & Customer trust, as well as Strategy for Revenue. Based on Table 1 about the results of sentiment analysis, it can be concluded that CSF indicators that receive negative or positive sentiment are the indicators that are very important in influencing the implementation of e-business in logistics and forwarding businesses in Bali.

Table 1. Autocode sentiment result by NVIVO

CSF Indicators	Very negative	Moderately negative	Moderately positive	Very positive
Technical Cost of ICT Equipment	0%	0%	3.5%	0%
Software and re-organization for secure payment	0%	0%	8.74%	0%
Maintenance & Upgrade	0%	0%	5.42%	25.29%
Optimism, Partner & Customer Trust	0%	0%	10.31%	68.97%
Innovation	0%	0%	11.89%	5.75%
Uncomfortably and Customer Satisfaction	0%	90.64%	34.09%	0%
Insecurity & Security Issues	0%	9.36%	0%	0%
Skill & Expertise	0%	0%	6.47%	0%
Data and System Security	0%	9.36%	0%	0%
Network Facilities & ISP Pricing	0%	0%	11.36%	0%
Management Commitment	0%	0%	5.07%	0%
Knowledge and Hiring Qualified Staff	0%	0%	6.47%	0%
Benefit for Organization	0%	0%	0%	0%
Distribution Channel	0%	0%	0%	0%
Strategy for Revenue	100%	0%	3.15%	0%
Scalability	0%	0%	0%	0%



Figure 2. Word cloud based on word frequency by NVIVO

Table 2. CSF indicators findings

CSF indicators	Survey results	Study documentation
Technical Cost of ICT Equipment or Tools	It is very important because it relates to long-term planning, investment, and quite a lot of costs	The things that make Technology a CSF are perceived advantage, perceived compatibility, and perceived complexity. It was much faster in influencing the adoption of e-commerce (Hossain et al., 2022). (Nurcahyo & Putra, 2021) stated that technology readiness was factor number 6 in e-commerce collaboration CSF. Technology compatibility and technology affordability are critical factors based on (Eze et al., 2021b).
Software and Reorganization for Secure Payment	It is very important because it relates to vital data that in principle is private.	
Maintenance & Upgrade	It is very important, so it requires special and competent personnel	
Optimism, Partner & Customer Trust	It is important, currently, the use of e-business is preferred because it makes communication easier	This indicator became critical factor number 5 (Nurcahyo & Putra, 2021). Competitor intelligence gathering, customer information gathering, and provider credibility were the environmental indicators for CSF. Likewise with testimonial, experts, and word-of-mouth (Eze et al., 2021b)
Innovation	Important	
Uncomfortably and Customer Satisfaction	This is important because customer comfort depends on e-business performance.	This indicator was critical factor number 7 (Nurcahyo & Putra, 2021) and it also stated by (Eze et al., 2021b) that user acceptance information was driven by organization efficiency.
Insecurity & Security Issues	Very Important	
Skill & Expertise in Digital Business	Very important, even the main issue.	Critical factor no. 2 (Nurcahyo & Putra, 2021)
Data and System Security	Very Important	Less factor no. 11 (Nurcahyo & Putra, 2021)
Network Facilities & ISP Pricing	Very important, even the main issue.	Critical factor no. 1 (Nurcahyo & Putra, 2021)
Management Commitment, Knowledge, and Hiring Qualified Staff	Very Important	Management support & information intensity were supporting variables (Hossain et al., 2022), in line with research (Eze et al., 2021b) that owner's support is those of organizational context for CSF. Critical factor no. 3 (Nurcahyo & Putra, 2021)
Benefit for Organization	Important	Critical factor no. 4 (Nurcahyo & Putra, 2021)
Distribution Channel	Important	Business partners became supporting variables (Hossain et al., 2022) and became critical factor no. 8 (Nurcahyo & Putra, 2021)
Strategy for Revenue	Important	Less factor no. 10 (Nurcahyo & Putra, 2021)
Scalability	Important	less factor no. 9 (Nurcahyo & Putra, 2021)

3.2 Discussion

From the opinions expressed by respondents, Figure 2 shows the words that appear most frequently when discussing the CSF of implementing E-business in logistics and forwarding businesses in Bali. Four words are strong, namely maintenance, innovation, facilities, and satisfaction. The following is a detailed discussion of each CSF indicator.

Technical Acceptance and Readiness. The technical acceptance and readiness indicators consisted of 8 sub-indicators, namely Technical Cost of ICT Equipment, Software, and Reorganization for Secure Payment, Maintenance & Upgrade, Optimism, Partner & Customer Trust, Innovation, Uncomfortability and Customer Satisfaction, Insecurity & Security Issues, Skill & Expertise. From the 8 sub-indicators, the main critical factors based on (Nurcahyo & Putra, 2021) and survey results that were very important, namely: (1) Skill & Expertise in Digital Business, (2) Optimism, Partner & Customer Trust, (3) Technical Cost of ICT Equipment or tools, and (4) Uncomfortability and Customer Satisfaction.

Based on this, it appeared that the capability and expertise of the service provider's human resources was the most important thing. It must be considered for the successful implementation of e-business in logistics and forwarding businesses in Bali. Then continued by the customer segment that was also used to and had trust in e-business implementation. The third thing was the problem of funding provided by companies to invest in the e-business sector.

Customer satisfaction with the e-business services was also included in this CSF indicator. Things that are taken into consideration from the customer side are perceived advantage, perceived compatibility, and perceived complexity. As seen from the results of sentiment analysis, 90.64% of respondents had moderately negative sentiments toward the Uncomfortability and Customer Satisfaction indicators. Many considerations arose from the respondent's perceptions regarding this matter. Based on word frequency calculations, it appeared in the word cloud in Figure 2 that the four most frequently phrases mentioned were things related to the Technical Cost of ICT Equipment indicator.

Data and System Security. Data and system security indicators based on survey results were very important, but based on Nurcahyo & Putra (2021), it was additional CSF indicators. This can be covered by collaborating with third parties who are experts in data and system security. This is in line with the negative sentiment regarding data and system security. Therefore, it must be carefully considered in terms of collaboration that guarantees data and system security.

Network Facilities & ISP Pricing. Network facilities & ISP pricing were the first critical factor according to Nurcahyo & Putra (2021). The survey results also showed that this was a very important indicator. The results of the sentiment analysis showed a positive reaction, so it could be believed that currently, the company is willing and able to provide e-business infrastructure. Facilities were also included in phrases that are often mentioned in the word cloud in Figure 2.

Management Commitment, Knowledge, and Hiring Qualified Staff. Management Commitment, Knowledge, and Hiring Qualified Staff were critical factors according to Nurcahyo & Putra (2021), and are perceived as very important based on survey results. The words management and commitment were also often mentioned based on the word cloud in Figure 3. In line with current government policy, several company operations were required to go through information systems or applications provided by the government. This was welcomed positively according to the results of sentiment analysis.

Benefits for Organizations. Even though research by Nurcahyo & Putra (2021) stated that benefits for organizations were a critical factor, respondents' perceptions did not show a tendency of positive or negative sentiment. Likewise, the survey results stated that this was important, but not very important. This happened because respondents did not feel the direct benefits (tangible benefits). More intangible benefits are felt, such as time efficiency issues, reduced number of work errors, and organizational effectiveness.

Distribution Channels. Research by Nurcahyo & Putra (2021) stated that distribution channels were a critical factor, but respondent's perceptions did not show a tendency of positive or negative sentiment. Likewise, the survey results stated that this was important, but not very important. This happened because respondents had not collaborated much with third parties. For this reason, it was necessary to consider establishing collaboration with third parties who were experts in the field of e-business, especially those related to the CSF indicators with very important predicates in Table 1.

Strategy for Revenue. The application of e-business in logistics and forwarding businesses in Bali did not aim to bring in revenue for the company. E-business is used to support and streamline business processes. This can be seen from the negative sentiment that emerged in the survey results. Likewise, research stated that strategy for revenue is an additional indicator of CSF.

Scalability. Scalability indicators were widely discussed in the application of e-business in logistics and forwarding businesses in Bali. Business people expected the implementation of e-business can expand business scope and increase scalability. In line with research by Nurcahyo & Putra (2021) which stated that scalability was also an additional indicator in CSF.

Based on the results of data analysis that have been described, the proposed Critical Success Factor (CSF) framework for implementing e-business in logistics and forwarding businesses in Bali is as follows in Figure 3. The proposed framework can be used as a reference in planning e-business development in logistics and forwarding businesses, by paying attention to key indicators and supporting indicators that are described in the CSF framework.

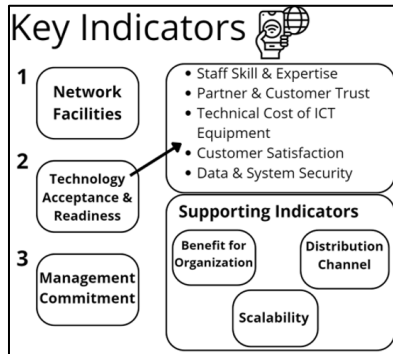


Figure 3. Critical Success Factor (CSF) Framework for implementing e-business in logistics and forwarding businesses in Bali

4 Conclusion

The Critical Success Factor (CSF) framework for implementing e-business in logistics and forwarding businesses in Bali has been formed with 2 indicator criteria, namely key indicators and supporting indicators. Key indicators consisted of Network Facilities, Technology Acceptance & Readiness, and Management Commitment. Supporting indicators consisted of Benefits for Organization, Distribution Channel, and Scalability. In more detail regarding the Technology Acceptance & Readiness indicators, there were several critical factors, namely Staff Skill & Expertise, Partner & Customer Trust, Technical Cost of ICT Equipment, Customer Satisfaction, and Data & System Security. It can be concluded that the proposed framework can be used as a reference in planning e-business development in logistics and forwarding businesses, by paying attention to key indicators and supporting indicators described in the CSF framework.

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