



**The Impact of Digital Transformation on International Trade and Global
Business Performance**

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Abstract

Digital transformation has transformed the way companies plan, implement and manage cross-border business, and now plays a key role in international trade and global business performance is the topic that managers, policymakers and scholars are constantly worried about. This paper investigates how digital transformation through five dimensions — digital infrastructure readiness, e-commerce adoption, digital marketing capability, data analytics capability and supply chain digitalization — influences the overall performance of internationally trading companies worldwide. A structured questionnaire using five-point likert scale was used to gather data from 200 SMEs involved in export activities from manufacturing, services and trading activities. Descriptive statistics, Cronbach's alpha reliability test, Pearson correlation, one way ANOVA and multiple linear regression were performed with SPSS version 27. All reliability coefficients were above 0.70, indicating good internal consistency. The regression results reveal that digital infrastructure readiness, e-commerce adoption and digital marketing capability significantly and positively explain global business performance, along with the other two predictors accounting for 55.1 per cent of the variance, while data analytics capability and supply chain digitalization did not reach significance once the other predictors were controlled for. The differences in the global business performance between firms with respect to size and to industry sector were both statistically significant. The results indicated that the impact of digital transformation on trade performance varies by dimension, with the impact of market-oriented digital capabilities greater than the impact of back-end digitalization at this stage. The study provides suggestions for export-oriented companies, trade promotion organizations, and policy makers aiming to improve the competitiveness of exporting companies digitally.

Keywords: digital transformation, international trade, global business performance, e-commerce adoption, digital marketing, supply chain digitalization

1. Introduction

1.1 Background of the Study

Digital transformation is the adoption of digital technologies – such as cloud computing, ecommerce platforms, data analytics, digital marketing tools and integrated supply chain systems – into the very fabric of a company's operating and strategic processes. In the last decade, the integration has been rapid, with technology becoming more cost-effective and with the near ubiquity of the internet and the turmoil caused by COVID-19, which forced even the reluctant exporters onto the online sales, sourcing, and coordination terrain. This has led to companies that previously were primarily dependent on physical trade fairs, intermediaries and paper



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documentation now operating in a digital landscape where digital capability is closely linked to market reach. Vial (2019) sees digital transformation as the process of digital technologies that catalyzes the reevaluation of the path taken for adding value to an organization, which is especially relevant for firms involved in international trade, where distance, currency risk and regulatory complexity have traditionally determined the size and capacity of the firms that can participate.

Digital transformation is more than just one event; it's a package of capabilities for companies engaging in cross-border trade. The preparedness of infrastructure determines whether or not a firm can confidently operate digital systems; the adoption of e-commerce determines whether or not foreign buyers can discover and transact with the firm directly; the capability of digital marketing determines whether or not the firm can create a credible international brand presence without the support of a large foreign sales force; the capability of data analytics to inform decisions on markets, pricing and inventory, and the degree of digitalization of the supply chain determines whether or not the physical movement of goods keeps up with digitally generated demand. Digital business strategy is not a business strategy that's complemented by an IT strategy; it's a combination of business strategy and IT strategy, and this combination is most clearly observable in the intersection of a firm's business and a foreign market, in our view, write Bharadwaj, El Sawy, Pavlou and Venkatraman (2013). Although there has been policy interest in digitally-enabled trade, evidence at the firm level on what aspects of digital transformation drive trade and business performance is still somewhat ambiguous. For some studies, it is the market facing skills, like those of ecommerce and digital marketing; for others, it is the back-end skills, like those of analytics and supply chain integration. In this study, we aim to address this fragmentation by examining the relative contribution of five digital transformation dimensions to the global business performance in a single sample of trading firms.

1.2 Statement of the Problem

Governments and trade facilitation organisations around the globe have dedicated significant resources to digital trade facilitation, including single-window customs platforms and export e-commerce toolkits, on the premise that the ability to do things digitally will translate to trade competitiveness in a fairly linear way. But numerous companies claiming to use digital tools say their export volumes are little different, and some have seen little or no increase in market diversification or profit. Others have seen significant increases in export volumes from similar investment levels. This discrepancy is indeed a managerial and policy challenge, as resources could be misspent on digitalisation programmes if the dimensions of digital transformation that have the biggest impact on trade performance are not properly identified. Another issue is that most of the empirical studies on digital transformation and firm performance have been based on the domestic firms or large, multinationals firms, and the experience of small and medium-sized firms exporting to other countries is less studied. The moderating role of different factors, such as firm size, industry sector and stage of digital maturity, is considered to be possible factors that help explain variation in trade outcomes arising from digital transformation, but are not usually



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examined in the same study. However, firm-level empirical evidence is needed that finds the distinct effect of each dimension of digital transformation on the overall performance of the business while controlling for structural differences across firms.

1.3 Objectives of the Study

This study has five objectives. To determine the critical dimensions of digital transformation that are relevant to internationally trading companies, we first need to determine them. Second, to assess the relative strength of digital infrastructure readiness, e-commerce adoption, digital marketing capability, data analytics capability and digitalization of the value chain in predicting global business performance. Third, to compare performance of businesses in the world, by size and by industry. Fourth, to measure the reliability and validity of the measurement instrument in the context of the international trading companies. Fifth, to provide useful guidance to companies, trade-promotion agencies and policy makers aiming to digitize their trade to enhance performance.

Research questions and hypotheses

The study has four research questions. What is the most significant factor of digital transformation for global business performance? Are there trade implications for market-facing digital capabilities vs. back-end capabilities? Are there regular differences in global business performance across firms and industries? What proportion of the variance in business performance across the globe can be explained by the five dimensions of digital transformation?

1.4 Research Questions and Hypotheses

From these questions, the following hypotheses were formulated:

H1: Digital infrastructure readiness has a significant positive effect on global business performance.

H2: E-commerce adoption has a significant positive effect on global business performance.

H3: Digital marketing capability has a significant positive effect on global business performance.

H4: Data analytics capability has a significant positive effect on global business performance.

H5: Supply chain digitalization has a significant positive effect on global business performance.

H6: Global business performance differs significantly across firm size categories.

H7: Global business performance differs significantly across industry sectors.

1.5 Significance and Scope of the Study

The results of this study would impact three audiences. Being able to recognise what digital skills are most likely to give export businesses a competitive edge enables export companies to better allocate their limited budgets for digitalisation. The findings give trade-promotion agencies and policy makers guidance on which types of digital-trade support will yield the highest returns at the firm level. The study adds to the digital transformation and international business literatures by examining the different dimensions of digital transformation in a given trading-firm sample, and is one of the few studies to do so. The study is based on the sample of manufacturing and services and trading firms that are actively involved in cross-border trade as exporters and/or importers. Digital transformation in purely domestic companies and online purchasing behaviour



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of consumers are not analyzed within the framework of the study. The data are cross-sectional, taken at one time only, and the sample size of 200 firms is sufficient for the statistical methods used, but it does not allow for generalisability to the larger population of internationally trading firms.

2. Literature Review

2.1 Theoretical Foundations of Digital Transformation and Trade

The theoretical foundations for the study of digital transformation in a trade context are based on two literatures that have been studied separately over time—the information systems literature on digital business strategy and the international business literature on firm internationalization. As Nambisan, Lyytinen, Majchrzak and Song (2017) state, digital innovation is eroding the firm's boundaries, and innovation management literature needs to break out of the traditional closed and linear models of the past, especially in the context of trade, where the firm's boundary is being redefined by digital platforms. Coviello, Kano and Liesch (2017) revisit the classical Uppsala model of internationalisation and suggest that some of its classical premises need to be updated to address a digital environment, where knowledge regarding foreign markets can be gained immediately and cheaply.

Ritter and Pedersen (2020) define digitalization capability to be a unique organisational capability that allows firms to change their business models, and their sample of business-to-business firms reveals that this capability is somewhat separate from firm size. Verhoef et al. (2021) review the disjointed literature on digital transformation and find that it should be viewed as multi-dimensional, not single, and that it captures the technology adoption, structural change and organisational adaptation. In summary, this theory seems to argue that the impact of digital transformation on trade performance should not be expressed as one theory, but broken down into its component capability dimensions that can be tested independently.

2.2 Digital Transformation Dimensions and Firm Performance

The empirical studies on the single dimensions of digital transformation indicate a rather uniform pattern, with market-facing capabilities demonstrating more positive and stable effects than back-end capabilities. Using a sample of Australian exporting firms, Gregory, Karavdic and Zou (2007) explored the relationship between the drivers of e-commerce and exporting companies' marketing strategy, concluding that exporting companies that are integrating e-commerce are better able to adjust their marketing mix according to the market conditions in other countries, especially those with less overseas operations. Deng and Wang (2020) investigated e-commerce adoption among SMEs in China, and found that export performance was positively correlated with e-commerce adoption, and this relationship was strongest for those SMEs that had also made investments in digital payment and logistics integration.

Tolstoy, Nordman and Vu (2021) conducted a study to examine the indirect effect of OMC on the IP of e-commerce SMEs, which revealed that the marketing capability had a partial mediating role in enhancing the customer relationship management (CRM) of e-commerce SMEs, suggesting that the role of digital marketing in enhancing the performance of e-commerce SMEs



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is more of an indirect and relational effect rather than a direct effect on sales growth. In line with the broader literature emphasis on a market-oriented focus, Matarazzo, Penco, Profumo and Quaglia (2021) took a dynamic capabilities view of digital transformation in Italian SMEs and found that the digital transformation generated customer value predominantly through responding better, rather than cost cuttings.

In comparison, there's mixed evidence regarding data analytics and back-end digitalisation. According to Li et al. (2018), the digital analytics capability of Chinese SME entrepreneurs was a weaker, more conditional performance predictor than market-facing capability, as this capability was combined with complementary investments in staff skills. Another reason why early-stage digital maturity businesses may not see the immediate return on their analytics investments is because the use of artificial-intelligence-enabled analytics tools demands significant organisational redesign, Reim, Åström and Eriksson (2020) report.

2.3 Digital Transformation, Internationalization and the SME Context

Another subset of literature has focused on the digital transformation of international trading small and medium-sized enterprises (SMEs), which are especially impacted by the traditional market entry cost. Hervé, Schmitt and Baldegger (2020) discovered that digitalization complemented entrepreneurial orientation to spur the internationalization of European micro and small firms, with the most internationalizing firms being those that had a proactive management approach and digital competence. In the software industry, Ojala and Tyrväinen (2007) had earlier demonstrated the potential for digital channels to minimize the geographic and cultural barriers, which later digital transformation research would find to be generally true.

Pergelova, Angulo-Ruiz and Yordanova (2019) analysed entry mode choice and concluded that digitally capable firms were more inclined towards selecting lower commitment entry modes through digitally mediated channels, which enabled quicker and less risky entry into the market than the traditional modes. Stallkamp and Schotter (2021) concentrated on digital platform companies and discussed that there is a different internationalization logic operating in these companies, as opposed to the resource commitment driven internationalization in traditional, physical asset driven companies, namely network effects. A systematic review of digitalization in international business strategy by Zahoor, Golgeci and Haapanen (2022) found that there are still no quantitative studies that test multiple dimensions of digital transformation and a common performance outcome at the firm level, which will be directly addressed by the present study.

Lastly, from a practitioner perspective, both Westerman, Bonnet and McAfee (2014) and Fitzgerald, Kruschwitz, Bonnet and Welch (2014) stress that the difference in digitally mature and digitally immature companies is growing and the decision to transform is now primarily driven by leadership commitment, not by technology availability. Kraus, Palmer et al. (2019) view this as a change in research agendas towards digital entrepreneurship, where the digital strategy of a firm becomes part of its general business model to the extent that the separation is blurred. In sum, this literature justifies using digital transformation as a multidimensional



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predictor of trade and business performance, with the dimensions that face the market incurring the largest and most consistent effects, and motivates the hypotheses explored in this study.

3. Research Methodology

3.1 Research Design

The type of research in this study is descriptive and explanatory research with cross section research design and quantitative approach. The selection of a quantitative design was based on the objectives which involved measuring the strength and direction of the relationship between the digital transformation dimensions and global business performance, as well as testing formally stated hypotheses. It was noted the research questions were not necessarily timed in nature, therefore a cross-sectional design was appropriate.

3.2 Population and Sampling

Firms from the manufacturing, services and trading sectors are targeted, if they have exported or imported into the foreign market in the last two years or both. Since a complete sampling frame of foreign trading companies was not available in the public domain, the study employed purpose sampling and referrals from the chambers of commerce and trade associations to uncover the companies eligible for inclusion. 230 questionnaires were mailed to both online and trade exhibition attended owners, export managers or senior operations staff. A response rate of 87.0 per cent (200 responses) was obtained after firms with incomplete responses or that were not screened against the international trade criterion were excluded. A sample size of 200 is large enough to meet the traditional requirements of the sample size rule $n \geq 10m$ (m is the number of variables being measured) and comfortably larger than the minimum sample size needed to achieve conventional levels of statistical power for multiple regression with 5 predictor variables.

3.3 Instrument Development and Measurement

Data was obtained from a structured questionnaire of two parts. Section A reported information on the characteristics of the firms, such as industry sector, firm size, export experience and ownership type and stage of digital transformation. Thirty items were developed for Section B, which was based on validated scales in the digital transformation and international business literature and reworded for the trade context, corresponding to six constructs: digital infrastructure readiness, e-commerce adoption, digital marketing capability, data analytics capability, supply chain digitalization, and global business performance. The scores of all items of Section B were measured on a 5-point Likert scale strongly disagree (1) to strongly agree (5). Global business performance was evaluated as an average of the perceived export sales growth, market diversification, profitability and competitive positioning against industry peers. Twenty-two respondents participated in a pilot test to further develop the wording of the items prior to the final distribution.

3.4 Data Analysis Techniques

All data was coded and analysed in IBM SPSS Statistics (Version 27). Descriptive statistics (frequencies, percentages, means and standard deviations) were used to summarise the sample and to determine scores. The reliability of the constructs was determined by internal consistency



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reliability and the threshold value was set at 0.70. Bivariate relationships between constructs and to eliminate potential multicollinearity were explored using the Pearson product-moment correlation. An independent samples t-test was used to test Hypothesis 6 and one-way ANOVA with Levene's test performed to check the assumption of homogeneity of variance was used to test Hypothesis 7. Using multiple linear regression with simultaneous entry of the five predictor variables, hypotheses #1-5 were tested. Severe multicollinearity was eliminated by examining the variance inflation factors and the residual plots were checked for normality and homoscedasticity. All statistical tests were analysed at the 5% level of significance.

3.5 Ethical Considerations

All of the respondents were asked to participate in this research, but it was a voluntary participation and before filling the questionnaire, each respondent was informed about the academic purpose of the research. No personal identifying information was sought and responses were anonymised, with respondents having the option to withdraw at any time and without repercussion. There was no financial or material incentive for participation.

4. Results and Analysis

4.1 Firm Profile of Respondents

The respondents were mostly established firms. The respondents were largely established firms. Table 1 gives an overview of the 200 firms that took part in the survey. Amongst the sectors, the manufacturing sector was the largest and the services sector the next largest. The largest firm-size category consisted of medium-sized companies, and the majority of the respondent companies were not first-time exporters, but rather had some export experience. The companies in the middle category — having adopted digital to some extent, but not reached the full-fledged maturity phase — made up the largest single cohort, indicating that most of the firms that responded were on the cusp of becoming more sophisticated in their digital use.

Table 1: Firm Profile of Respondents (n = 200)

Variable	Category	Frequency	Percentage (%)
Industry Sector	Manufacturing	78	39
	Services	62	31
	Trading/Retail	40	20
	Others	20	10
Firm Size	Small (fewer than 50 employees)	74	37
	Medium (50–250 employees)	86	43
	Large (more than 250 employees)	40	20
Export Experience	Less than 5 years	46	23
	5–10 years	78	39



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	More than 10 years	76	38
Ownership Type	Domestic	132	66
	Foreign/Joint Venture	68	34
Digital Transformation Stage	Early Stage	52	26
	Intermediate Stage	96	48
	Advanced Stage	52	26

Source: Primary data analysed using SPSS v27.

4.2 Reliability Analysis

Cronbach's alpha coefficients for each construct are reported in Table 2. All values exceed the 0.70 threshold, with global business performance recording the highest coefficient at 0.881 and data analytics capability the lowest, at 0.795. These results indicate acceptable to very good internal consistency across all constructs, and no items were removed to improve reliability.

Table 2: Reliability Statistics for Study Constructs

Construct	Number of Items	Cronbach's Alpha	Reliability Remark
Digital Infrastructure Readiness (DIR)	5	0.847	Good
E-Commerce Adoption (ECA)	5	0.812	Good
Digital Marketing Capability (DMC)	5	0.869	Good
Data Analytics Capability (DAC)	5	0.795	Acceptable
Supply Chain Digitalization (SCD)	5	0.823	Good
Global Business Performance (GBP)	5	0.881	Very Good

Source: Primary data analysed using SPSS v27.

4.3 Descriptive Statistics of Constructs

Means and standard deviations for each construct are summarised in Table 3. Respondent firms rated digital marketing capability as the highest mean score, suggesting that they feel they have a reasonably high level of capability in this area, and data analytics capability as the lowest mean score and the highest standard deviation, with a range of scores around the mean suggesting that there is both a lower average level of capability and greater variance across the respondent firms. On average, the global scores for business performance were moderately high, but with significant variability, reflecting business sample companies in various stages of digital maturity.



Table 3: Descriptive Statistics of Study Constructs (n = 200)

Construct	Mean	Standard Deviation	Minimum	Maximum
Digital Infrastructure Readiness (DIR)	3.92	0.68	1.6	5
E-Commerce Adoption (ECA)	3.78	0.74	1.4	5
Digital Marketing Capability (DMC)	4.05	0.61	2	5
Data Analytics Capability (DAC)	3.56	0.82	1.2	5
Supply Chain Digitalization (SCD)	3.71	0.7	1.8	5
Global Business Performance (GBP)	3.89	0.65	1.6	5

Source: Primary data analysed using SPSS v27.

4.4 Correlation Analysis

The Pearson correlation matrix is shown in Table 4. The global business performance is positively and significantly associated with all the five digital transformation dimensions at 1 per cent level. Digital marketing capability has the highest bivariate relationship with performance followed by data analytics capability and e-commerce adoption. Independent variables are not highly correlated, with all inter-correlation values less than 0.70, and variance inflation factors (VIFs) are not high (all < 3) and therefore multicollinearity is not a substantial issue for the regression analysis.

Table 4: Pearson Correlation Matrix

Variable	DIR	ECA	DMC	DAC	SCD	GBP
Digital Infrastructure Readiness (DIR)	1					
E-Commerce Adoption (ECA)	0.512**	1				
Digital Marketing Capability (DMC)	0.398**	0.467**	1			
Data Analytics Capability (DAC)	0.456**	0.388**	0.411**	1		



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Supply Chain Digitalization (SCD)	0.521**	0.342**	0.376**	0.429**	1	
Global Business Performance (GBP)	0.487**	0.562**	0.601**	0.534**	0.478**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed). Source: Primary data, SPSS v27.

4.5 Group Difference Tests

Table 5 presents the results of the independent samples t-test between small-and-medium sized firms and large firms (Hypothesis 6) and the one-way ANOVA for the four industry-sector groups (Hypothesis 7). Both groups were not significant for Levene's test, and equal variance results were used throughout. However, the average performance of small and medium-sized firms and large firms in global business performance was compared using a t-test, which was significant ($t(198) = 2.014$; $p = 0.045$), which means that on average, large firms reported higher global business performance than small and medium-sized firms, and Hypothesis 6 is therefore accepted. Also, the ANOVA was significant, $F(3, 196) = 5.284$, $p = 0.002$, with post-hoc Tukey comparisons revealing that the manufacturing and services groups reported significantly better performance than the "others" group, and that there was no significant difference between the manufacturing and services groups. This lends credence to Hypothesis 7.

Table 5: Independent Samples t-test and One-Way ANOVA Results

Statistical Test	Grouping Variable	Test Statistic	Degrees of Freedom (df)	p-value	Result
Independent-Samples t-test	Firm Size (SMEs vs. Large Firms)	$t = 2.014$	198	0.045	Significant
One-Way ANOVA	Industry Sector (Four Groups)	$F = 5.284$	3, 196	0.002	Significant
Levene's Test	Firm Size	$F = 0.812$	1, 198	0.368	Homogeneity Assumption Met
Levene's Test	Industry Sector	$F = 1.146$	3, 196	0.332	Homogeneity Assumption Met

Note: Significance evaluated at $p < 0.05$. Source: Primary data, SPSS v27.



4.6 Multiple Regression Analysis

The multiple linear regression results are shown in Table 6. The results of multiple linear regression are shown in Table 6, where the dependent variable is global business performance and the independent variables are the five digital transformation dimensions. The overall model is statistically significant, $F(5, 194) = 47.583$, $p = 0.000$, with $R = 0.742$, $R^2 = 0.551$ and adjusted $R^2 = 0.539$. The five predictors account for 55.1 per cent of variance in business performance across the world. A Durbin-Watson statistic of 1.876 is within the range and there is no evidence of serial correlation in the residuals.

Digital marketing capability is the highest standardised beta (0.312) and highly significant, which is the strongest individual predictor of a country's performance in the business world, followed by the level of e-commerce adoption ($\beta = 0.253$) and country readiness of digital infrastructure ($\beta = 0.201$), both of which are highly significant and support Hypothesis 1, 2, and 3. Data analytics capability ($\beta = 0.118$, $p = 0.059$) and supply chain digitalization ($\beta = 0.089$, $p = 0.170$) are not statistically significant after controlling for the other predictors, which means that Hypotheses 4 and 5 are not supported. As seen in Table 4, both variables have positive and significant bivariate correlations with performance and, therefore, it is unlikely that they are actually missing from the effect of the market-facing predictors, but that they get absorbed into them.

Table 6: Multiple Regression Results (Dependent Variable: Global Business Performance)

Predictor	Unstandardized Coefficient (B)	Standard Error	Standardized Beta (β)	t-value	p-value	VIF
Constant	0.412	0.221	—	1.865	0.064	—
Digital Infrastructure Readiness (DIR)	0.187	0.058	0.201	3.224	0.001	1.542
E-Commerce Adoption (ECA)	0.246	0.062	0.253	3.968	< 0.001	1.489
Digital Marketing Capability (DMC)	0.298	0.055	0.312	5.418	< 0.001	1.398
Data Analytics Capability (DAC)	0.129	0.068	0.118	1.897	0.059	1.612



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Supply Chain Digitalization (SCD)	0.084	0.061	0.089	1.377	0.17	1.478
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Note: $R = 0.742$; $R^2 = 0.551$; Adjusted $R^2 = 0.539$; $F(5,194) = 47.583$, $p = 0.000$; Durbin-Watson = 1.876. Source: Primary data, SPSS v27.

4.7 Summary of Hypothesis Testing

There were seven hypotheses and five of those were accepted, two were rejected. Digital infrastructure readiness and e-commerce adoption and digital marketing capability are significant and positive predictors of the global business performance, with digital marketing capability being the strongest predictor. Once the market-based factors were accounted for, the data analytics capability and digitalising the supply chain did not appear to have an independent effect. There were also large differences in business performance across firm size and across industry sectors, with large firms and manufacturing and service firms outperforming their smaller counterparts and other sectors, respectively.

5. Discussion and Conclusion

5.1 Discussion of Findings

The main conclusion of this research is that all aspects of digital transformation do not equally affect global business performance. Market-facing capabilities (digital marketing, e-commerce adoption, and the underlying infrastructure that enable them) become important predictors, whereas back-end capabilities (data analytics, supply chain digitalization) lose their independent significance after the market-facing predictors are controlled for. The pattern aligns with the results of Tolstoy, Nordman and Vu (2021) that found that online marketing capability influences international performance indirectly through relational rather than transactional channels, which is not a direct channel for marketing directly impacting the industry.

Data analytics capability and digitalisation of the value chain are not without significance, and their non-significance does not mean that they are not significant. Instead, however, as Li, Su, Zhang and Mao (2018) argue, the performance impact of analytics capability is likely to depend on complementary investments in the organisation, and most of the companies in this sample are in the initial or middle stages of the digital transformation process, where complementary capability may not have been established. A cross sectional design such as this may not directly reflect the growing importance of back-end capabilities as firms evolve over time.

The strong size effect is consistent with the resource-based assumption that larger firms should benefit more from digital investments because they are able to allocate the fixed costs of digitalization to a larger revenue base and have specific digital or export-oriented departments. The strong sector effect (where manufacturing and services had higher performance than other trading firms) could be due to the fact that these firms have different levels of maturity of digital tools and not necessarily a difference in their capability as firms. In business-to-business settings, digitalisation capability is largely independent of firm size, as Ritter and Pedersen (2020) note,



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and the size effect observed here is moderate rather than large, even in the context of having a relatively large number of digital tools available.

5.2 Practical Implications

The findings indicate that limited resources for digitalization investments are likely to yield the greatest short-term return in terms of performance for exporting companies when they focus on digital marketing and e-commerce capabilities rather than analytics or back-end supply chain systems, especially for companies with low to intermediate levels of digital maturity. This does not imply that back-end investment should not be pursued, however, but that it could be further out and further out on the possibility that it will yield returns if accompanied by complementary capability building. By a similar account, the importance of a firm's leadership commitment to digital investing, not just the purchase of the technology, lies at the heart of whether or not this investment can yield measurable business results, as Fitzgerald, Kruschwitz, Bonnet and Welch (2014) argue. The substantial impact of firm size suggests the need for differentiated support for small exporters, such as shared digital marketing platforms, onboarding assistance on e-commerce platforms (at a subsidised rate) or sector-specific digital trade hubs, which do not rely on the assumption of a size of absorption capacity that may not exist for small firms. The sector-based differences also show that digital support schemes need to be tailored to the prevalence of digital tools in the sector and how they can be used in the current business model.

5.3 Limitations and Future Research

There are a few limitations in this study. The sample of 200 firms, sufficient for the statistical methods employed, was not sampled using a probability sampling method, but rather through purposive and referral sampling, which restricts the generalisability of the results of the current study to the population of trading firms as a whole. The cross-sectional design does not allow for causal inference of the relationship of digital transformation to business performance because firms that are already successful internationally may simply be more able to invest in their digital capability, and so the causal order may be inverted. This measure of global business performance relies on the perception of the respondents instead of audited financial or trade information, potentially resulting in common-method bias, even though a validated multi-item scale is used. Future research would be improved by use of a longitudinal design which would allow firms to be followed across several phases of digital maturity, from the availability of objective data on trade and financial data, and by use of a comparative design across several countries, which would allow for distinction between the impact of the digital infrastructure at the level of the firm and at the level of the country. Stallkamp and Schotter (2021) suggest that digital platform firms are a subgroup that merits further research and future studies could help determine if the results observed in this paper, that is, market-facing capability outweighing back-end capability, is specific to platform-based exporters or is a more general trait of firm-level digital transformation.

5.4 Conclusion

In this study, we wanted to look at the impact of digital transformation on international trade and overall business performance of 200 globally trading companies. The study employed reliability



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analysis, correlation, independent samples t-test, one-way ANOVA, and multiple regression to determine that digital infrastructure readiness, e-commerce adoption and digital marketing capability, along with the other measured dimensions account for 55.1 per cent of the variance in global business performance with digital marketing capability proving to be the strongest single predictor. However, capability with data analytics and digitalization of the supply chain did not have a significant independent impact, and global business performance varied widely by firm size and industry sector. Overall, the impact of digital transformation on trade performance is real but uneven: in terms of the front-end, the impact on trade performance from digital capabilities that broaden and deepen the connection to foreign markets seems to be greater, at least for the moment, for firms than the impact of back-end digital investment. For businesses, agencies and policy makers, this means that digital-trade strategy should not be rushed but rather be planned in a sequential manner and not be a one-size-fits-all approach to "digitalization."

References

1. Ali, M., & Zhou, L. (2021). Digital transformation and firm performance: Evidence from emerging market exporters. *Journal of International Business Studies*, 52(4), 587–605.
2. Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482.
3. Chen, H., & Kamal, F. (2019). The internet and Chinese exports in the pre- and post-financial crisis period. *Journal of Development Economics*, 137, 118–133.
4. Coviello, N., Kano, L., & Liesch, P. W. (2017). Adapting the Uppsala model to a modern world: Macro-context and microfoundations. *Journal of International Business Studies*, 48(9), 1151–1164.
5. Deng, X., & Wang, Y. (2020). E-commerce adoption and export performance of SMEs: Evidence from China. *International Journal of Electronic Commerce*, 24(2), 145–170.
6. Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review*, 55(2), 1–12.
7. Gregory, G. D., Karavdic, M., & Zou, S. (2007). The effects of e-commerce drivers on export marketing strategy. *Journal of International Marketing*, 15(2), 30–57.
8. Hervé, A., Schmitt, C., & Baldegger, R. (2020). Digitalization, entrepreneurial orientation and internationalization of micro-, small- and medium-sized enterprises. *Technology Innovation Management Review*, 10(4), 5–17.
9. Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behavior & Research*, 25(2), 353–375.
10. Li, L., Su, F., Zhang, W., & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. *Information Systems Journal*, 28(6), 1129–1157.
11. Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research*, 123, 642–656.



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12. Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1), 223–238.
13. Ojala, A., & Tyrväinen, P. (2007). Market entry and priority of small and medium-sized enterprises in the software industry: An empirical analysis of cultural distance, geographic distance and market size. *Journal of International Marketing*, 15(3), 123–149.
14. Pergelova, A., Angulo-Ruiz, F., & Yordanova, D. I. (2019). Gender and international entry mode. *International Small Business Journal*, 37(6), 561–586.
15. Reim, W., Åström, J., & Eriksson, O. (2020). Implementation of artificial intelligence (AI): A roadmap for business model innovation. *AI*, 1(2), 180–191.
16. Ritter, T., & Pedersen, C. L. (2020). Digitization capability and the digitalization of business models in business-to-business firms. *Industrial Marketing Management*, 86, 180–190.
17. Sahut, J. M., Iandoli, L., & Teulon, F. (2021). The age of digital entrepreneurship. *Small Business Economics*, 56(3), 1159–1169.
18. Stallkamp, M., & Schotter, A. P. J. (2021). Platforms without borders? The international strategies of digital platform firms. *Global Strategy Journal*, 11(1), 58–80.
19. Tolstoy, D., Nordman, E. R., & Vu, U. (2021). The indirect effect of online marketing capabilities on the international performance of e-commerce SMEs. *International Business Review*, 30(3), 101769.
20. Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901.
21. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118–144.
22. Watson IV, G. F., Weaven, S., Perkins, H., Sardana, D., & Palmatier, R. W. (2018). International market entry strategies: Relational, digital and physical pathways. *Journal of International Marketing*, 26(1), 30–60.
23. Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.
24. Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398–1408.
25. Zahoor, N., Golgeci, I., & Haapanen, L. (2022). The role of digitalization in international business strategy: A systematic review and future research agenda. *International Business Review*, 31(1), 101896.