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太平天国の戦況と長崎
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松尾　晋一*
Shinichi MATSUO

はじめに

太平天国の乱は中国国内の物流だけではなく、国際貿易にも影響を及ぼした。たとえば「琉球」を通じた太平天国情報を分析した真栄平房昭の成果によると、琉球の貿易活動は深刻な影響を被って、この知らせを受けた島津斉彬は琉球の対中国貿易の先行きを危惧していたという[1]。また、対馬の宗家には、中朝間の貿易が滞る状況が伝わって、対馬にも影響する可能性を危惧するとともに、これらの情報を幕府へ伝えていた[2]。そして長崎は、嘉永5年（1852）12月以降同7年7月まで唐船の来航がないといった事態にも陥った[3]。太平天国の乱は経済の面でも日本に影響を与えたいたことは明らかである。

本稿ではこのうち長崎に注目する。太平天国の乱と長崎との関係は松浦章の研究があり、唐船がもたらした情報や日清間の貿易活動の実態に与えた影響などを明らかにした[4]。具体的には、幕府が海外情報入手先として唐船を重視していたものの、太平天国に関する情報が期待したほど入手できなかった理由が、日中貿易の拠点であった乍甫への主要な物資供給地である蘇州が太平天国軍の攻撃を受けてたからだと指摘した。また、文久期唐船の長崎来航がないなかで、上海からのイギリス船二艘が日中貿易を担っていたことも明らかにした。これらは極めて重要な指摘であるものの、太平天国の存在を通じた分析を行ったわけではなく断片的な解明に留まっており、事実確認もふくめ検討の余地が残っている。

そこで本稿では、太平天国のどういった情報が情報集積地の長崎に集まって、唐人社会に影響を与えたのか改めて確認していく。太平天国は十年を超えて存在したわけで長崎に対する影響の度合いにも変化があったことは容易に予想できることから、この点に注意を払う。また、従来の研究では日中間の貿易における日本側について長崎のみを対象に考えてきた傾向が強く、そして、太平天国の情報は対馬、琉球などからも長崎へ伝わって来たにもかかわらず、情報源をふまえてこなかった印象を持つことから、これらも意識して述べていく。

*長崎県立大学地域創造学部教授

一　大陸の動乱情報と長崎唐人社会

・海外情報の集散地としての長崎

市古宙三によると[5]、唐船によってはじめて太平天国に関する情報が日本に伝わったのは、嘉永5年12月のことだった。その情報は天徳の年号を称する明裔朱氏の明朝恢復を志す運動であるが、真の明裔ではなく偽称して乱を企てた賊でいずれ滅亡するだろうと、楽観的な見方をしたものにすぎなかった。

当時の長崎における情報の取り扱い状況は翌年のものになるが、嘉永6年10月27日付で岡藩御用達石本卯之助が草刈敬輔・武藤章蔵に送った書状からわかる。すなわちそこには、「一、一昨年以来、唐国江明代之餘類起り立、及騒動候一件、宗対馬守方朝鮮国江詰方之役人御承之趣、九月中別紙之通御同家江御届相成申候、右は、去冬入津之唐人共、内々風説申居候儀ニ御座候へ共、当表江渡来の唐船仕出方、乍甫と申候所方、遠境之趣ニて、聢と不及取留、其上、表向申立候儀ニも無御座候處、其後追々騒乱及増長候儀と奉存候、此段御含迄申上候」と書かれていた。これによると、対馬宗家から朝鮮から得た情報として明代の残党の末裔が騒動を起こしていると伝わったことがわかる。ただ、長崎では昨冬（嘉永5）に唐人が風説として話題になっていたものの、長崎に向かう商船の出航地である乍甫から遠く離れた地域での出来事であり、正式に長崎奉行所へ申し出ることはなかったというのである。この後、唐船は翌々年（安政元年）7月26日まで来航がなく[6]、対馬、そして琉球からの情報がこの間長崎に伝わってきた[7]。

石本卯之助の同年11月28日付で古田右馬允に送った書状には、「一、唐国も一昨年来、明代餘恢復を名として、一揆起立候處、当春以来別て盛ニ相成、不容易騒動之よし、朝鮮・琉球両国立風聞、追々承及申候、定て御承知之儀とは奉存候、是以、往々皇国之患共ニは無之哉、誠ニ以苦々敷次第御座候」とある。長崎においては、朝鮮そして琉球からの情報で事態が大きくなっていることを知り、日本の患いになるのではと疑念を抱き、そのことに苦々しさといった感情を持つ者がでてくる段階にまでなっていたことがこれからわかる。

以上から、長崎への唐船・オランダ船の来航が途絶えたなかでも対馬・琉球から海外情報が伝わる環境に長崎があったこと、そして集積された情報が各地へ伝えられる発信地として長崎が機能していたことが確認できる。

幕府の出先機関である長崎奉行所は、本来なら来航した唐船、そしてオランダ船から海外情報をいち早く、そして他とは異なる情報量を得られる環境にあったものの、ことこの段階では太平天国に関する情報について他のルートから得ていたのであった。ただしこれは、長崎が幕府の出先機関として機能しなかったことを意味するわけではない。各方面から情報が長崎奉行所に集まり、そしてそこを拠点に周辺大名間で情報を共有していた事実をふまえるとハブとしては機能できていたことになろう。

・長崎在留唐人の動揺

前節で確認した長崎の情報環境にもっとも影響を受けたのは唐人だった[8]。唐船の来航が途絶えており、長崎でロシアのプチャーチンと交渉した川路聖謨は、日記（嘉永7年正月14日）に「この節は夏船・冬船共に来らざる故に、帰ること能わず。其上故郷は戦争のちまたと成り、日日合戦やむ時なしなど聞ゆれば、哀しみて、日ごとに関帝堂みくじをとり、或は泣き、或は色を直して死する如くなり居るよし也。砂糖其外共に遣い切りて、みな市中より買上なり

と承る。唐人共貧相なるけしき、亡国の民となれば､相までもよからぬにや｡」と記している。故郷が戦争状態にあって、不安を抱えた唐人たちの様子が、川路の目に入った。川路は､「亡国の民」となれば人は人相まで変わるとこの時認識したのである[9]。

こうしたなか、嘉永7年2月十二家在留船主江星棠・楊少畬が長崎会所年行司へ、家族の安否確認のために船の貸与を願い出たのである[10]。すなわち嘉永5年の冬に長崎へ向かう際、江西地方で賊徒が騒乱を起こした風聞があったので、その後江南の蘇州辺りまで騒ぎ長崎への船が仕立てられないのではないかと懸念したことによる。もちろん中国の家族の生存も、彼らにとっては気がかりであったはずである。

実は、対岸でも長崎との貿易に依存していた商人は同様の状況にあったようで動きがあった。長崎と貿易を続けないと死活問題だから、乍甫から二隻の船が長崎を目指したのである。一隻は嘉永7年7月10日に出船して7月22日長崎に到着した。もう一隻は同月15日に出船して同月27日長崎に辿り着き[11]、これで在長崎の唐人も一息付けたのであった。一艘目は橘湾に面する茂木村沖へ最初に辿り着いたが、その時得た大陸の様子が7月22日付の震八から五島家への書状でわかる[12]。そこには､「去春四艘共無滞五月末着唐、正月二月頃廣西逆党江南江乱入、南京・鎮江・揚州之城三ヶ所ヲ失ひ蘇州之居民方々江逃散、又ハ八月頃上海道一揆起り江南江官軍大勢集り防禦有之、商売筋往来打絶申候、仍而昨夏昨冬仕出方出来不申候、当時ニ而者追々賊勢衰諸方江逃去申候、本船七月十日乍甫ゟ仕出、跡船一艘者十五六日頃仕出候積ニ御座候、右豊利船ゟ差出候書簡大意ニ御座候」と書かれている。

これによると、昨年の正月・2月頃に広西の逆党が江南へ乱入して南京・鎮江・楊州へ攻め入り落城させ、蘇州の人は方々へ逃散した。その後八月に至り、上海で一揆が起こり江南へ官軍が集まりこれを防御した。そのため物流は途絶えた。これによって昨夏、昨冬に長崎へ船が出せなかったことがわかる。後に賊勢力（太平天国軍）が衰えて諸方へ逃げ去ったことで7月10日に乍甫から一艘だし、もう一艘が15・6日にでたことがわかる。

この時の二艘の唐船が伝えた蘇州辺りでの風聞から太平天国の外、小刀會をはじめ全国各地で一揆などが起こり中国大陸の混乱が続いていることを長崎、そして日本が知ることになった。これを報告した王氏江星棠・十二家船主楊少畬は最後に､「此後如何成行可申哉、何れ茂懸念罷在申候」と記していて、今後への不安が払拭できていない心のうちを長崎奉行所へ伝えたのである[13]。

これが的中したのか、この後一年間長崎への唐船の来航はなかった。この間、日向に唐船が漂着して大陸及び中国沿岸の情報を知ることができたが、尋問にあたった江星棠・楊少畬は、漂着民から聞き取った内容の後に､「前条之次第を以相考仕候へ者、一躰海陸共不穏時節、諸荷物運送出来兼、終ニハ昨冬も商売相休候義者無之哉、万里外ニて同国之者ニ出会候ても故郷之人ニ無之私共商売筋ニおいて者委敷相分り兼、実以心痛至り、乍憚御憐察可被成下候」と記した[14]。すなわちこの二人は、海陸ともに不穏な状況に物流が麻痺し、この結果昨冬も商売が滞ったのではないか、同国人に出会っても自分たちの商売の詳細は知れず、心痛だとの思いを伝えており、自分たちを思いやって憐れんでほしい､とまで書き記したのであった。

長崎にいた唐人がここまで書くことは、通常ない。先が読めないなかで、追い込まれていた

心のうちを長崎奉行にぶつけたと考えたい。長崎の唐人はここまで窮地に立たされていたのであった。

二　河南エリアの戦況と日中貿易体制

・唐船・オランダ船がもたらした中国情報

安政期の長崎への唐船来航数は、元年(1854)2年がそれぞれ2隻、3年が3隻、4年が4隻、5年が1隻、6年（1860）が3隻といった状況であった[15]。一方、オランダ船は年一艘来航した。このほか、日本に漂着した唐人から得られた情報も含め、以下では長崎で得られた太平天国関係の情報を確認していく。

安政2年(1855)4月に江星棠・楊少延から長崎奉行に提出された「清国騒乱」は日向国に漂着した唐人の口書で、「唐国騒乱之模様委く相尋候処、昨春北京近く押寄候洪秀全之余党、蒙古之精兵等も支、又々散乱致し、所々乱妨におよひ候者誅被致候」[16]とある。これによって、清軍が北伐軍を討伐していることがわかる。しかし安政2年（1855）7月のオランダ商館長が提出した「別段風説書」には、安政元年頃の風説として「一分国過半は滅し北京と南方との通路を絶切申候、右之事勢は興廃の場尓有之満州韃靼の柄権無覚束勢尓有之候」とある[17]。これからは北伐軍の優勢がわかり、清の権勢が覚束ないとの認識を持たれるほどの状況が伝わった。「清国騒乱」が最新の情報と知りつつも、異なる情報が前後して長崎に入ってきたので、戦況の判断をしかねる状況がまだまだ続いていたと思われる。

この翌年に来航した唐船のうち、二番、三番船がそれぞれ知らせた現地の状況は、南京・鎮江といった長江の水運の拠点を太平軍が支配しているために産物の輸送に支障がでて、高値になっているといったものだった[18]。ここから唐船による長崎貿易の維持にも支障がでてくると長崎でも判断されたのであろう。

その後の安政3年7月付の「別段風説書」によると、安政2年5、6月頃の情報として、沿岸部では海賊行為が収束しないが、中国南方の騒乱は治まっているようにみえるとあって[19]、事態の改善に期待したくなる知らせが入った。つづく安政4年(1857)2月付の「唐国賊乱之模様」にも「紅巾之賊乱、道光之末ニ起り、此節迄数箇年之間、戦戮相加リ候儀ニ付、最早十分之内七八分ハ平定相成申候」[20]とあって、大陸の状況も落ち着くとの見通しを長崎でもしたに違いない。

だが、同月20日に唐船が入港した後安政5年7月29日まで唐船（南京船）の来航はなかった。この間、長崎に情報をもたらしたのがオランダ船で、安政4年11月に「別段風説書」が作成された。これはアロー戦争がはじまったことを日本へ最初に伝えたもので、朝鮮が開港したこともふれている。そこには「土寇」の首長と訳された洪秀全に近頃3万人の援軍が集まり、支配領域を拡大し、最新の情報でもその勢いが衰えてない状況が記されていた[21]。つづく同5年正月に作成された「別段風説書」も、先の情報と同様の内容だった。

これらの情報からは掴めない賊と扱われた太平天国の支配領域拡大に関係する情報が、1年8カ月ぶりに長崎に来航した唐船から伝わった。この船によると、昨年までに清軍が鎮江城を取り囲み奪い返して南京城も同様の作戦をとった。つづけて6月に福建・浙江両省は「穏ニ相成居候得共、自今変遷之有無難計奉存候、右ニ付諸方之商人外出不致、今以南北不通ニ有之候間蘇州交易之場所倍不景気ニ而只今之模様ニ而ハ、幾時頃流通可致哉無足非次第ニ奉存候」[22]

と、現地の状況を伝えている。長崎へ唐船がこの間来なかった理由などは、ここに記されている通りで、太平天国軍と清軍の攻防が福建・浙江省の経済活動を停滞させて対日貿易に大きな影響を及ぼしていたのである。この後さらに長崎は大きな影響を受けることになる。

・唐船貿易体制の崩壊と琉球産物の長崎商法の継続

1860年4月、太平天国軍は蘇州に攻め入り占領した。これによって在留唐人程稼堂の妻子が長崎へ避難したのである。同年5月25日付の「此度唐国賊乱之ため蘇州落城致し、私妻子共難を避ケ御当地ニ逃来候ニ付、右之模様略左ニ申上候」[23]に詳細が記されている。これは太平軍が蘇州進出を日本にはじめて伝えたものと考えられているが[24]、それによると4月4日に蘇州が取り囲まれ、同月13日には巡撫が殺害され、これで城門が開き落城に至ったという。同15日まで殺害が続いた。

また、同月14日十二家宏豊船が乍甫へ着いたものの土匪が放棄して積み荷を載せたまま寧波へ逃れ、王氏吉利ならびに吉隆船は同15日に上海近郊の呉淞に着船したが、上海の諸問屋はいずれも門戸を閉めて荷物の引請手がない状況であったことまで伝わった。この書付に程は、「情景聞ニも不忍事計ニ而、筆紙ニ難申尽候」と書いている。これは単に故郷の惨状を憂いて書いたわけではなく、従来の貿易体制が崩壊して、先行きへの見通しも立たない不安の表現であったと思われる[25]。

程の妻子が長崎に逃れた際に乗船した船を特定することはできないが、唐船以外の船であった。つぎの史料は松浦章が紹介したことのある文久元年（1861）11月付の長崎奉行高橋和貴への上申書である[26]（下線は筆者による）。

長崎表在留罷罷候唐船主鈕春杉之工社陳志家族四人、同船主稼堂之総代鄧増弟家族男女十一人、同船主楊少畬家族四人、同船鈕春杉之工社陳英家族男女七人、追々亜米利加船、英吉利船にて便乞渡来仕候ニ付、入館之儀、船主共より願出候間、相糺候処、何れも唐国賊乱未静謐不相成ニ付、親族を慕ひ當港迄罷越候ニて、事実進退相究り、一方之活路を求め遥かに渡来仕り入館願立候段者、無余儀仕第に相聞え、尤當三月中申上置候唐船主鈕春杉弟嫁其外之者同様之事柄ニて渡来仕候節、入館為仕候振合も有之候間、此度も承届入館為仕置候申候、依之船主共差出候願書和解四通相添、有馬帯刀申談此段申上候、以上、

これから太平天国の蘇州進出の影響で長崎の唐人貿易関係者やその家族が日本へ渡来してきたことがわかる、と松浦は指摘した。改めてこの史料で注目したいのは、同年3月に「唐船主鈕春杉弟嫁其外之者」が唐人屋敷に入ることを長崎奉行に申し出て許されていた点である。この事例は、程の妻子が日本に逃れた後の最初の例であると推測される。

これを先例に今回長崎奉行に対して26名の唐館への受け入れを願っているわけだが、この時期に唐船が長崎には来航しておらず、短期間に大陸からの避難民が長崎を訪れたわけではなかった。小人数がこの史料にも記載のあるアメリカ船やイギリス船といった外国船を利用して段階的に長崎へ訪れたのであった。長崎奉行高橋は大目付・目付に届けたようで、一連の届はその後、外国奉行が同年11月11日、勘定奉行・勘定吟味役が同月中に確認していることがわかる[27]。これに幕府がどう応えたのか知れる史料は現在見つかっていないが、『バタヒヤ新聞』（巻22　文久元年辛酉10月11日）には、「近頃衰へし南京の賊は此禅代に乗じて再び意を得たり。

当今寧波は賊に刧かされ、其土地の民人散乱し、自然と交易も止にけり」とあることから、幕閣も複数の情報から中国大陸の実状を把握していたことは間違いない 。現状を容認せざるをえなかったからこそ、避難民が長崎に滞在していたものと思われる。

こうした大陸からの避難者のなかには、画人王克三、徐雨亭、陳子逸などもいて、長崎在留唐人との親族関係にないものたちもいた。彼らは日本の文人たちとの交流を深め長崎滞在は数年に及び、王克三の場合は慶応元年（1865）3月から5月ごろに帰国したとみられている 。避難民の帰国は、大陸の情勢と無関係に行われた。

以上のように、太平天国の影響で既存の長崎貿易を維持できる状況にはなく、太平軍の蘇州進出が唐人の家族の生命を危険にさらし、その避難場所として長崎が選択された。日本への渡航の実現にアメリカ船、イギリス船が協力して、また日本側も状況を理解し避難民の受け入れを許して彼らを保護したのであった。琉球や対馬、そして他の開港地とは違い、長崎の場合は太平天国の勢力拡大が唐船貿易体制を崩壊させ長崎の唐人社会に直接的に影響を与えていたのであった。

この状況下長崎貿易に従事していた長崎在留船主はイギリス船を利用した上海貿易に活路を見いだし、唐船主は唐華商になった[30]。とは言っても、文久2年（1862）2月18日付で長崎の通詞によって訳された「上海新聞」には、「一、当港(上海)及近隣之各港ニおゐて外国之貿易は、当時殊更繁昌ニ可相及処、去ル第一月二十二日之風聞ニ而、長髪之賊徒等当港を侵犯し、外国の商人及土地之商人差別なく、其荷物を奪ひ取不法を相働きし故、衆人の難儀少からす、遂に商売も不景気になれり」[31]とあって、唐人による長崎貿易の改善は困難を擁したのであった。この状況は長崎奉行にとっても悩みの種だった。つまり長崎会所が危機的状況だったのである。

ところで琉球も長崎と同様に太平天国の影響を受けて清との貿易は不振であった。この状況下の島津家の対応について注目した上原兼善によると[32]、島津家が目をつけたのが、唐船の来航が減少して薬種類の輸入量が落ち込んでいた長崎であった。斉彬は老中阿部正弘との交渉でさらに五年間の延長を勝ち取り、一時的に利益をあげた。ただ、オランダ船の貿易活動の活性化や太平天国の影響などで思うようにいかない時もあった。

文久2年7月に島津家は琉球国御救助を理由に唐船の来航に関して幕府に申し立ての書付を送ったものの、期限がせまっていた琉球産物の長崎商法のみがこの時許されている[33]。島津家の立場に立つと、琉球の唐船貿易を維持するためには、旧態依然の福建―琉球―長崎の交易ルートの存続が重要と判断したのであろう。一方長崎奉行にとって、開港以後長崎会所存続の基礎となっていた日中貿易を独占[34]することの意義が、先述の状況ではほぼ成り立たなかった。そのうえ五カ国への俵物輸出を幕府が黙認したこともあって唐人の俵物貿易の独占は崩壊しており、何とか会所を存続させようとしていた長崎奉行にとって島津家の申し出は、拒否する理由がなかったのである。

この動きは、太平天国の動向が単に長崎の唐人社会に影響しただけではなく、既存の長崎における貿易体制に少なからず影響を与えたことの証左であり、日中間の唐船貿易という枠組みに影響があったことを明らかにしている。

おわりに

太平天国の戦況のふたつの情報が日本の現実的な政治、政策に影響を及ぼした。つまり太平天国の北伐軍が北京に迫ったことと、日本向け唐船貿易の拠点およびその周辺の経済圏を占領したことである。

前者は清が倒れ日本周辺の国際関係が現状変更する事態を想定せざるをえない情報であって、日本が外交方針を転換して間もない時期と重なってさらなる現状変更への不安と幕府が認識するに至った。海外情報の入手の拠点である対馬、長崎、薩摩、そして幕府がそれぞれの立場で積極的に情報を得ようと動いたところは特徴的である。一方後者は、太平天国の戦況がより具体的、直接的に日本の経済活動に影響した段階で、江南エリアの事象だったこともあり、長崎、薩摩・琉球の問題となった。つまり、対馬には情報が入らず、幕府は積極的にこの件に関する情報収集を行わなかった。この時期幕府は、まさしく内憂外患の状況にあったが、具体的な貿易政策への対応など積極的に試みることはなかった。この理由は欧米との修好通商条約の締結があって新たな日中貿易体制が機能していたからである。

以上の状況下の長崎は本文で述べた通りであるが、一点強調しておきたいのは、太平天国軍が蘇州を落城させて以降長崎の既存の唐人社会は大陸からの避難民を受け入れ、従来の貿易体制崩壊を受け入れ生き残りをかけて動いたのであった[35]。長崎の近世的な唐人社会は、太平天国の乱の影響によって崩壊したとの理解も許されよう[36]。

注

1　真栄平房昭「幕末期の海外情報と琉球―太平天国の乱を中心に―」（地方史研究協議会編『琉球・沖縄：その歴史と日本史像』雄山閣、1987年）。

2　拙著「対馬宗家が得た太平天国の戦況情報と日本の対応」（中野等編『中近世西国・九州史研究』吉川弘文館、2024年）。

3　『唐船進港回棹録・島原本唐人風説書・割符留帳―近世日中交渉史料集―』（関西大学東西学術研究所、1974年）16・17頁。

4　松浦章『江戸時代唐船による日中文化交流』（思文閣出版、2007年）第六編第一章、同『海外情報からみる東アジア　唐船風説書の世界』（清文堂、2009年）第四編第四章。

5　「幕末日本人の太平天国に関する知識」同『近代中国の政治の社会』東京大学出版会、1971年、Ⅵ（初出1952年）。

6　前掲『唐船進港回棹録・島原本唐人風説書・割符留帳―近世日中交渉史料集―』16・17頁。

7　前掲拙著「対馬宗家が得た太平天国の戦況情報と日本の対応」。

8　嘉永四年以来唐船の長崎来航がなかったため貿易に従事する人々も苦しい状況にあった。そのため身分に応じて会所銀を原資として町乙名を通じて無利息で貸与（返済は10ヶ年）する対応がとられた。（岩田みゆき「幕末期における長崎貿易商人の海外情報－巨智部忠陽〈『青山史学』第39号、2021年〉）。

9　川路聖謨著、藤井貞文・川田貞夫校訂『長崎日記・下田日記』平凡社、1968年108・109頁。

10　1854（嘉永7）年2月「二月長崎在留唐船主願長崎会所年行事へ船借受帰国の件」（『大日本古文書　幕末外国関係文書之五』東京大学出版会、1984年、379・380頁）。

11　『大日本古文書　幕末外国関係文書之七』（東京大学出版会、1984年）99頁。

12　「風説袋」長崎歴史文化博物館収蔵、青方14　13。

13　前掲『大日本古文書　幕末外国関係文書之七』301～305頁。前掲「風説袋」にも、有。ところで、この年はペリーが浦賀へ、プチャーチンが長崎へそれぞれ来航した。長崎にあった岡藩御用達石本卯之助は嘉永6年（1853）について同藩古田右馬允へ、「誠ニ当年は、東西之異船騒動ニて、京摂も至て不景気之由、追々承知仕諸国とも同様之事と只管歎息仕候」と書き送っている（『石本卯之助書翰―豊後岡藩御用達書簡―』〈別府大学付属博物館、1991年、69頁〉）。プチャーチンの長崎来航とペリーの浦賀来航で国内は動揺していて京・大坂もひどく不景気であるという。時間が経つにつれて事情を知れた諸国も同様の様子でひたすら歎息した、と岡藩へ伝えたのであった。長崎だけが不景気ではなく、日

本の東西かかわりなく全域が不景気とあって、石本卯之助も将来を見通せない現状への不安を吐露したのであろう。この時期長崎で商売に携わる人は日本人であろうと、唐人であろうと理由はともあれ、大なり、小なり不安を抱えていたのである。

14　卯月18日付前掲「風説袋」。

15　前掲『唐船進港回棹録・島原本唐人風説書・割符留帳―近世日中交渉史料集―』17頁。

16　『大日本古文書　幕末外国関係文書之十一』(東京帝国大学、1919年)168～169頁。前掲「風説袋」、前掲『石本卯之助書翰―豊後岡藩御用達書簡』、『長崎ニ而唐人ゟ申出候唐国兵乱之一條　甲比丹ゟ申出候一條(安政四年)　薬種其外蘭船持渡品書』(東京大学史料編纂所　島津家文書11　12　6)にも収載されていて、長崎周辺の大名家に情報が伝わっていたことがわかる。

17　風説書研究会編『オランダ別段風説書集成』(吉川弘文館、2019年)460頁。松方冬子編『別段風説書が語る19世紀　翻訳と研究』(東京大学出版会、2012年)287頁。

18　松浦章「『遐邇貫珍』と幕末に伝えられた太平天国情報」『海外情報からみる東アジア』(清文堂、2009年)464～465頁。

19　前掲風説書研究会編『オランダ別段風説書集成』483頁。前掲松方冬子編『別段風説書が語る19世紀　翻訳と研究』311頁。

20　『大日本古文書　幕末外国関係文書之十五』(東京帝国大学、1922年)581頁。

21　前掲風説書研究会編『オランダ別段風説書集成』、501頁。前掲松方冬子編『別段風説書が語る19世紀　翻訳と研究』、330頁。

22　午八月付午壱番船主　程稼堂・楊少畬「唐国騒乱風説書」(「風説袋」長崎歴史文化博物館収蔵、青方14　1　4)。

23　「唐国賊乱ニ付避難の畧記」(長崎歴史文化博物館収蔵、13　655)。「申六月」の同文が「文久元年清国賊乱ニ付聞書和解」(長崎歴史文化博物館収蔵、13　651)にある。

24　松浦章「ジャーディン・マセソン商会と日清貿易―文久元年一番ランシフィールト船の来航をめぐって―」(『海事史研究』〈第25号、1975年〉)。

25　琉球から島津家への(文久元)酉5月付の知らせには、「殊ニ藩州表ハ去年四月ヨリ長毛賊数多攻入、城ノ内悉焼尽死人数万人、壮年ノ者ハ西門ヨル遁去、助命又ハ西湖ニ致溺死候者モ余多有之、到六月ハ長毛賊城内へ相住居厳相守、到当分ハ外城数百里築席暴虎ノ挙動共有之由ニ候得ハ、以前御買物相調候商人共、存亡ノ程モ不相知」(『鹿児島県史料忠義公史料　第一巻』〈鹿児島県、1974年〉370頁)とある。『バタヒヤ新聞』にも、「文久元年辛酉八月十四日なり、「南京の一揆に就て種々の風説あれ共、上海・寧波辺にて恣に奪掠を為すと云ふ説のみは實なる可し」とあって江戸でも状況は知られていた(明治文化研究会編『幕末明治新聞全集2』〈大誠堂、1934年〉23頁)。

26　『続通信全覧・類輯之部』13、雄松堂出版、1985年、665～666頁。前掲松浦章『江戸時代唐船による日中文化交流』、第六編第三章。

27　「長崎奉行伺之留」(『外務省記七坤』国立公文書館蔵)。菱谷武平「唐館の解体と変質－新しい居留地の形成－」(『長崎談叢』第59輯、1976年)。

28　前掲『幕末明治新聞全集２』90頁。

29　鶴田武良「陳逸舟と陳子逸―來舶畫人研究四―」(『國華』1044號、1981年)。同「王克と徐雨亭―來舶畫人研究六―」『國華』(1070號、1984年)。

30　松浦章「ジャーディン・マセソン商会と日清貿易―文久元年一番ランシフィールト船の来航をめぐって―」(『海事史研究』第25号、1975年)。同「長崎唐船主から長崎華商へ」(『関西大学文学論集』〈第56巻第１号、2006年〉)。それぞれ、のちに前掲同『江戸時代唐船による日中文化交流』に所収。

31　「亥正月廿八日報告〔風説書〕」『鹿児島県史料玉里島津家史料補遺南部弥八郎報告書一』(鹿児島県、2002年)111～118頁。

32　上原兼善『近世琉球貿易史の研究』(岩田書院、2016年)409～419頁、466頁。

33　『薩藩海軍史　上』(原書房、1968年)184～192頁。

34　『長崎県史　対外交渉編』(吉川弘文館、1985年)876～878頁。

35　前掲「長崎唐船主から長崎華商へ」。

36　なお、文久3年後半には、長崎も平和を取り戻して貿易も回復傾向にあったようであるが、『日本交易新聞』第三八号文久3年12月19日神奈川開判によると(明治文化研究会編『幕末明治新聞全集１』〈大誠堂、1934年〉125・126頁)、「長崎ハ当時平穏にて交易も稍々復古の姿を顕せり、但し重立ちたる輸出の物品ハ彼地に於ても亦横濱と同く唯生綿のミ。」、『日本貿易新聞』第43号には、「政府は此港(横濱)を鎖さんか為に當港を甚しく衰微せしめ、却て長崎を繁昌に趣かしむ、是全く此港(横濱)の貿易を彼地(長崎)に移転せしめんか為也。」(同135頁)とある。こうした点が唐人社会も同様であったのか、この点は検討すべき課題だと考えている。

〔附記〕

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〈研究論文〉

Child Suicides in the COVID-19 Pandemic: The Need to Address Mental Health

Xi JIA
Akihiko SUZUKI

Abstract

The rising number of child suicides in recent years has become a social concern, with causes such as academic underachievement and mental disorders, such as depression, dominating the statistics. The COVID-19 pandemic has also been linked to an increase in depressive tendencies due to isolation and loneliness. However, as child suicide is the result of a complex interplay of factors, it is essential that cases are carefully investigated under expert guidance. It is also important to understand the socio-economic factors, such as weakening social ties and declining self-esteem among children in Japan. It is believed that a change in adult attitudes and a major societal shift are needed to address this issue.

Introduction

The mental state and mental health of children was in crisis during the COVID-19 pandemic. Around the world, mental disorders are a significant and often ignored cause of suffering that interfere with children's health. Child Suicides, in particular, are on the increase and the problem is becoming more serious.

According to the United Nations Children's Fund (UNICEF) Report, more than one in seven adolescents aged 10 to 19 worldwide has been diagnosed with a mental disorder, and nearly 46,000 adolescents die from suicide each year, ranking suicide as the fifth most prevalent cause of death for the age group[1].

In Japan, the environment surrounding child suicide has become increasingly severe over the past two decades. The annual number of suicides in all age groups peaked at 34,427 in 2003, and then declined, remaining at about the 20,000 level. Since the Basic Act on Suicide Prevention was passed in 2006, the number of suicides has been on the decline, with the number of male suicides increasing for the first time in 13 years and the number of female suicides increasing for the third consecutive year in 2022, although still more than 10,000 fewer than at the peak in 2003. However, the number of child suicides did not fall during this period. Since 2016, when the Basic Law on Suicide Prevention was amended the number of child suicides has continued to increase. According to statistics from the National Police Agency there were 567 suicides among people under the age of 19 in 2017. This number increased to 798 in 2022[2]. In particular, the number of suicides among school children (elementary, junior high and senior high school students, hereafter school children) in 2022 was 514, exceeding 500 for the first time since statistics began in 1980, the highest number ever. If university students and vocational school students are included the number rises to 1,063.

Child suicide is also more serious in Japan than in other countries. Comparing per capita suicide death rates (suicide rate per 100,000 population) in a group of seven highly economically developed countries (G7), Japan has the highest rates among these countries, as well as among teenagers and those in their twenties. Moreover, Japan is the only country where suicide is the leading cause of death in the 10 to 19 age group. In the 15 to 19 age group, suicide accounts for more than 50% of all deaths[3]. Child suicide needs to be regarded as a serious problem for society, especially in Japan.

This study aims to analyze the societal factors contributing to child suicide in Japan, using data from media reports and official data, such as suicide prevention reports, and other public sources. The aim is to suggest necessary measures and advocate for social change to address the issue.

1. Suicide and the Mental Health Situation of Children and Adolescents

1) Current Situation in the International Community

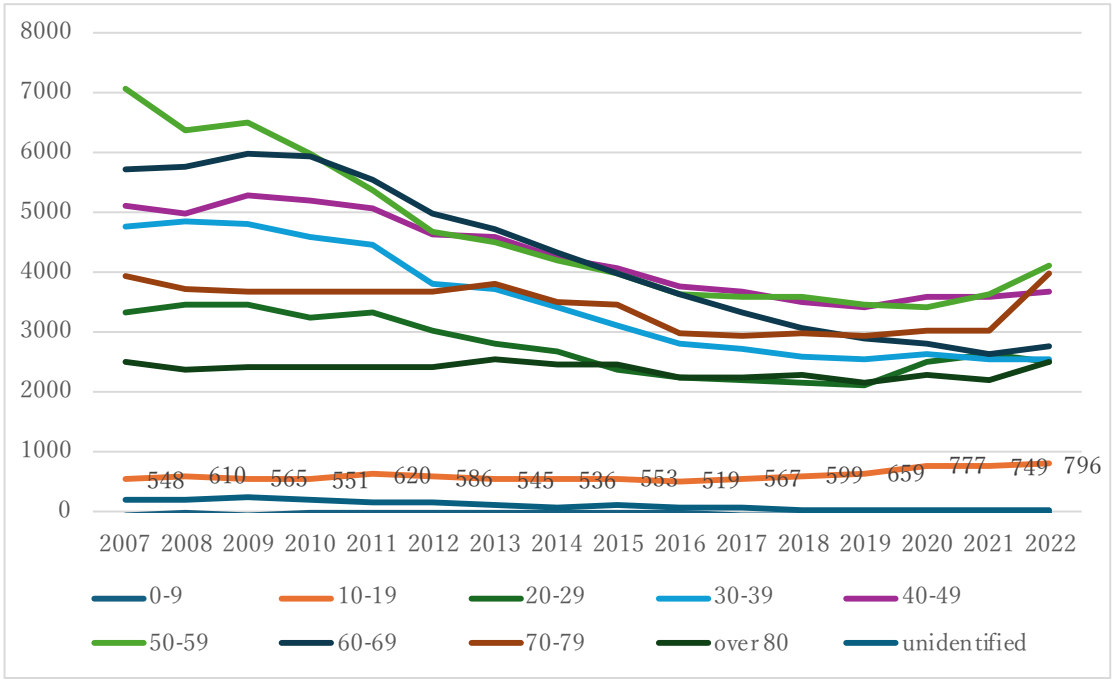
In October 2021, UNICEF warned that children and adolescents could suffer the mental health consequences of COVID-19 for many years to come. According to the latest estimates, more than one in seven young people aged 10 to 19 worldwide have been diagnosed with a mental disorder. Nearly

46,000 young people commit suicide each year, making it one of the five leading causes of death in this age group. In addition, initial results from an international survey of children and adults in 21 countries conducted by UNICEF and Gallup on the impact of COVID-19 show that one in five young people aged 15 to 24 say they often feel depressed or lethargic. These results show that the mental health of children, who are vulnerable members of society, is further compromised by the significant environmental changes that have occurred because of the lockdown (urban blockades), educational settings, limited human contact, and blocked communication during the COVID-19 pandemic. The study also shows that the number of children committing suicide is increasing[4].

(2) Current Situation of Child Suicide in Japan

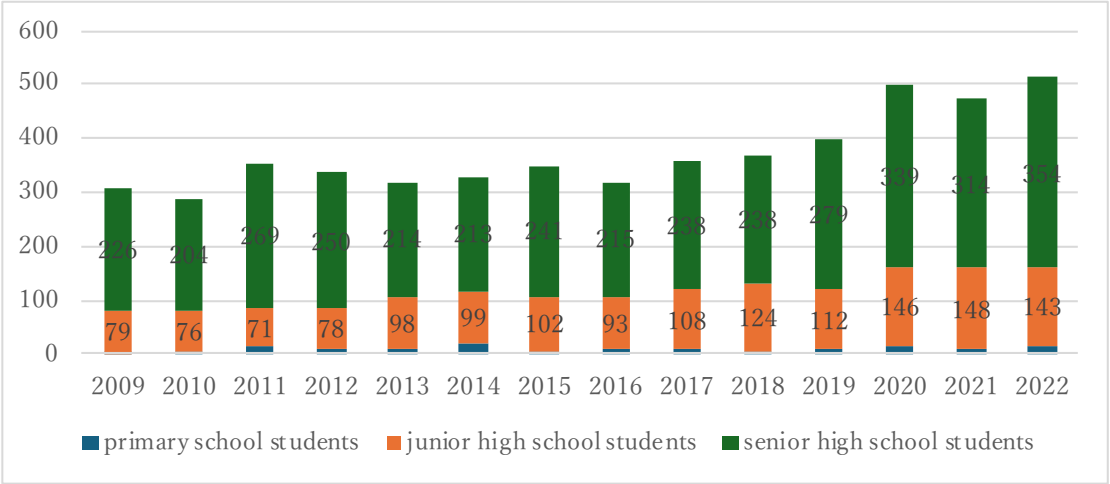
Suicide statistics from the White Paper on Suicide Prevention in 2023 from Ministry of Health, Labor and Welfare Japanese National Police Agency show that while the number of suicides in Japan had been declining since the enactment of the Basic Law on Suicide Prevention, the number of suicides among those aged 19 and under has been steadily increasing since 2016 and has been getting worse every year for the past 10 years (Figure 1).

Figure 1: Change in the Number of Suicides in Japan by Age Group



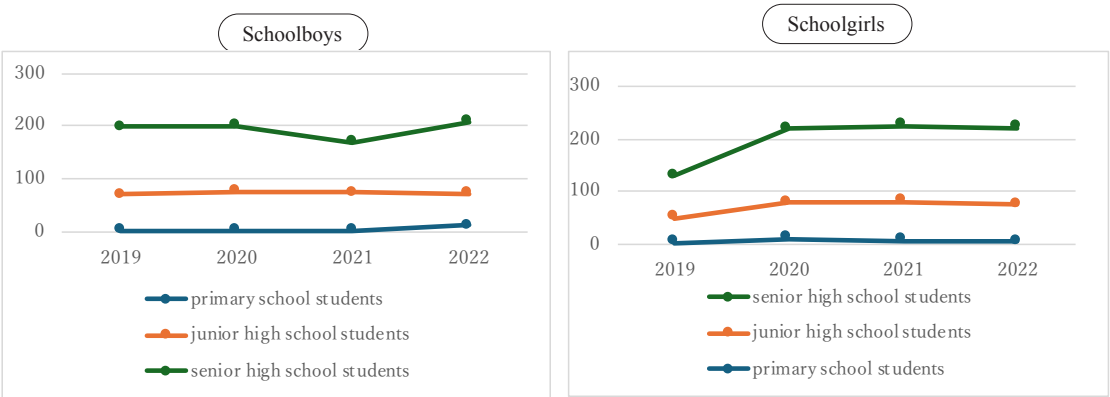
Source: Based on Ministry of Health, Labor and Welfare "White Paper on Suicide Prevention in 2023"

Figure 2: Suicides among elementary, middle, and high school students



Source: Based on "Suicide Statistics 2023" from the Japanese National Police Agency

Figure 3: Annual number of suicides among elementary, junior high, and high school students (by gender)



Source: Based on "Suicide Statistics 2023" from the Japanese National Police Agency

According to Japanese Police statistics relating to 2022, a total of 514 primary, junior high and senior high school students committed suicide. It is the highest number since statistics began in 1980, and the first time the number exceeded 500. Senior high school students accounted for the largest number, 354 (up 40 from the previous year), or 70 percent of the total. There were 143 junior high school students (down 5) and seventeen primary school students (up six) suicides[5].

As Figure 2 shows, the number of high school student suicides reached 339 in 2020, the highest number up to that point. It fell in 2021, but increased in 2022 to 354, even higher than in 2020. For junior high school students, after reaching the previous highest number for two consecutive years, 146 in 2020 and 148 in 2021, the number decreased in 2022 and remained high at 143. The number of suicides

among senior high school and junior high school students, especially among girls, reached a high level for three consecutive years after a large increase in 2020 (as shown in Figure 3), and the number of suicides among high school students exceeded that of university students for three consecutive years.

The figures above show that child suicide is continuously worsening compared to other generations, with a record number of suicides and suicide rates in 2022, making suicide a priority issue.

2. Causes of Child Suicide

According to the suicide statistics by the Japanese National Policy Agency, the most common reason for suicides in children was "poor academic performance" (83 students), followed by "worries about career" (60 students). The rest were "worries/effects of illness (other mental illness)" (56 students), "discord with schoolmates (other than bullying)" (49 students), "worries/effects of depression" (44 students), and "discord in parent-child relationships" (40 students).

Long-term statistics for the period 2009-2021 show that a high proportion of primary school children had 'family problems', with 'reprimand and discipline from home' accounting for more than 20% of all cases. Junior and senior high school students tended to have a higher proportion of 'school problems', with poor academic performance and worries about careers topping the list. Depression is also a crucial reason for suicide, and it is noted that depression is on the rise, particularly among junior and senior high school girls[6].

Professor Fumiharu Yamagata of Kansai University, an expert on children's welfare, stated that "everyone has worries about school life and future careers, but the number of children who are unable to talk to their friends about their problems is probably increasing due to the weakening of human relationships caused by the COVID-19 pandemic"[7].

It should be noted, however, that a high percentage of suicides among primary and junior high school students have no identifiable cause. According to the National Police Agency's suicide statistics, more than 30% of the deaths of students and children who were presumed to be suicides in their early teenage years were treated as 'undetermined', and around 25% even in the second half of their teens[8]. In the National Police Agency's investigations, reasons for suicide are often deduced from suicide notes, words and deeds before death, and family statements. Due to the impossibility of interviewing the person after the fact there is often no data on the reasons or motives for suicide in the case of child suicides. This is particularly the case for children in their early teens, and it has been pointed out that even if there was an unpleasant event that triggered the suicide, the period leading up to the suicide is shorter than in other households[9]. In addition, children face challenges, such as difficulty expressing themselves, and it is often unclear whether all of their thoughts are expressed in suicide notes and consultations with those around them. It is also pointed out that most suicides have multiple and complex causes and backgrounds and occur in the context of a chain of different factors, so that the factors leading to the awareness of death are intricately intertwined, and focusing only on the final triggers may obscure the actions that are really needed[10].

As a result, the proportion of primary and junior high school students for whom the cause cannot be identified is particularly high.

Table 1: Situation of students who committed suicide (2022)

	Primary school	Junior high school	Senior high school	Total
Family discord	2	20	21	43
Worries about future career	0	18	19	37
Reprimand from parents, etc.	1	22	11	34
Friendships (excluding bullying)	1	14	17	32
Mental disorder	2	6	18	26
Poor academic performance	0	19	3	22
Weariness with life	0	6	8	14
Pessimism due to infirmity, etc.	0	5	7	12
Problems in romantic relationships	0	3	6	9
Bullying Issues	1	4	0	5
Corporal punishment and inappropriate instruction by teachers and staff	1	0	1	2
Concerns in relationships with faculty and staff (excluding corporal punishment and inappropriate instruction)	0	0	1	1
Unknown	14	72	169	255
Other	1	7	15	23

Source: Ministry of Education, Culture, Sports, Science and Technology, "Results of the Survey on Student Guidance Issues such as Problematic Behavior and Truancy of Students in 2022"

Furthermore, the viewpoint of witnesses also changed depending on their positions. In a survey conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), in which multiple answers were given for any relevant information from the persons concerned, even for reasons other than those known to the police as facts, it was found that 60.9% (71.4% in 2020) of suicides in primary schools were stated as, "reasons unknown" (no change from normal behavior and no indication of being particularly troubled), and 36.7% in junior high schools (48.5% in 2020) and 57.1% in senior high schools (53.4% in 2020). The percentage was high at all levels[11].

If the causes of suicide are not clearly identified, effective suicide prevention measures cannot be formulated. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) indicated in its guidelines that to understand the background when a child commits suicide, a basic investigation should be conducted promptly and then moved to a "detailed investigation" if requested by the family and so on. However, in October 2023, the results of

a survey on the operation of the system were released, and it was found that out of a total of 411 primary, junior high and senior high school students who committed suicide in 2022, only 19 cases, 5% of the total, were investigated in detail by lawyers and experts. It was also found that in 40% of the cases, the system was not explained to the families, such as how to request an investigation[12].

In addition, as of 2023, the Administration for Children and Families will be responsible for measures against child suicide, and in its "Urgent Plan for Strengthening Measures against Child Suicide", the Administration for Children and Families also states that it will "consolidate suicide statistics and related data held by police and fire departments, schools, school boards and local authorities, and conduct multi-faceted surveys and research to conduct multi-faceted analysis". Satomi Takahashi, who has been active in child suicide prevention for many years, points out that collecting and analyzing data from different departments in the same way as in the past would not identify the real causes of child suicide, thus will not allow effective suicide prevention measures to be developed. Takahashi suggests that interviews to identify the causes should be conducted in a safe and secure environment for bereaved families, with an ethical framework created by psychiatrists, bereavement counsellors and other experts familiar with the psychology of bereaved families.

3.Social Factors Leading to an Increase in Child Suicide

1) Impact of COVID-19 Pandemic

Although further detailed research into the causes of child suicide is needed, Dr Yoshinori Cho, President of the Japanese Association for Suicide Prevention, has pointed out that the reasons for the increase in youth suicide are the 'worsening employment situation', an increase in 'family problems' and 'reduced human interaction', and that 'the impact of the COVID-19 pandemic is significant'.

In fact, there are many early indications of the impact of the COVID-19 pandemic on children's psyches. Staying at home and social distance have negative psychological effects, including PTSD-like symptoms, confusion and anger[13]. Research has also shown that, as an indirect effect of the COVID-19 pandemic, it may have increased suicides due to an increase in anxiety and stress[14].

Children's mental health in particular has been affected in a variety of ways as a result of the many and varied changes in their daily lives, including major changes in their school and home environments. For example, the social distancing and school closures due to the COVID-19 measures increased depression, anxiety and isolation, even in healthy children, and these symptoms were correlated with the length of isolation due to social distancing. In addition, the symptoms persisted not only during but also after social distancing. It is found that school closure, reduced physical activity, irregular sleep and online addiction due to COVID-19 caused depression, numbness, laziness, learning difficulties and self-harm in children, while abuse and violence in the family increased. Furthermore, there is no doubt that the limited communication caused by the COVID-19 pandemic makes it even more difficult to see calls for help from children, which are difficult to identify in the first place, making early detection of suicide risk even more difficult[15].

The National Institute of Child Health and Development conducted a total of seven online surveys between April 2020 and December 2021 to determine the current state of life and health of children and parents affected by the COVID-19 pandemic. The results showed that more than 70% of all children had one or more stress reactions, such as 'easily irritated' or 'unable to concentrate', a figure that has remained high since the first survey[16]. In addition, the fourth survey, conducted between 17 November and 27 December 2020, found that 15% of 4th to 6th year primary school students, 24% of junior high school students and 30% of senior high school students exhibited moderate or higher depressive symptoms according to the Patient Health Questionnaire Adolescents (PHQ-A) scale. Moreover, regarding self-injury, 17% of primary and junior high school students said they had hurt themselves in the week before the survey and 24% of primary and junior high school students said they wanted to hurt themselves or die[17].

Furthermore, according to the fifth survey, conducted between 19 February and 31 March 2021, more than 70% of the 501 children from primary school to senior high school (equivalent) reported some kind of stress, such as not wanting to think about corona (42%), getting easily irritated (37%), having difficulty concentrating recently (32%).

In the 7th survey report, conducted between 8 and 31 December 2021, 16% of the 487 children between the ages of primary school and senior high school (equivalent) had moderate or higher symptoms of depression (about one in six). Among them, 94% of the children felt they needed help, but 40% did not seek help. The most common reason given was 'Unable to express feelings in words', followed by 'seem to be unable to get good advice' and 'didn't seem to be taken seriously'[18].

2) Unwanted loneliness

With the increase in child suicides due to the COVID-19 pandemic, "the current social situation is such that when a social problem arises, the unwanted loneliness of having no one to rely on aggravates the social problem or complicates its structure, resulting in suicide and creating a new social problem," was the analysis of Koki Ozora, President of the non-profit organization that provides a 24-hour helpline for young people "Anata no Ibasho" (The place where you fit in)[19].

In its revised draft of the "Outline for the Promotion of Support for the Development of Children and Young People", the Japanese government has clearly stated its policy to strengthen its response to the problems of loneliness and isolation in light of the prolonged COVID-19 pandemic. It also identified the rising number of suicides as a 'top priority issue'. "Many children and young people are experiencing heightened anxiety and the problem of 'unwanted loneliness' is becoming more apparent"[20].

In English the word loneliness can be somewhat ambiguous, referring to both self-imposed loneliness when seeking solitude, but also to unwanted social or physical isolation. In Japan, as interest in loneliness and isolation issues has increased, particularly during periods of isolation during COVID-19, a new term has been coined, unwanted loneliness, to clarify this ambiguity.

Since the late 1970s, loneliness has been defined, loneliness scales developed and researched, and since 2000, in addition to loneliness issues, social isolation has become a growing concern, with

research continuing mainly in developed countries.

Loneliness is a state of mind where one feels disconnected from other people, either emotionally, socially or physically, while unwanted loneliness refers to the state of not being able to rely on others or not being able to talk to others even when you want to. Social isolation refers to a state in which there is no one to ask for help with everyday problems, no one to talk to about worries, no one to ask for help in emergencies such as illness, and no one who understands one's problems, i.e., a state in which there are no 'trusted others'[21].

The WHO Guide to Suicide Prevention identifies 'social isolation' as one of the socio-demographic factors associated with suicide and 'loneliness' as one of the emotions of people at high risk of suicide. It is known that there are various social factors behind suicide, such as overwork, deprivation, fatigue due to childcare and caring, bullying, loneliness, and isolation, as well as mental health problems. Some studies have shown that people who are isolated are at higher risk of suicide than those who are not isolated[22].

During the COVID-19 pandemic, mental health deteriorated worldwide, and in Japan in 2020, as the infection began to spread, suicides began to increase for the first time in 11 years and has shown no signs of decreasing to date. The factors include fear of infection and economic problems such as unemployment, as well as worsening social isolation and loneliness due to quarantine and enforcement of social distance. Based on the results of a nationwide questionnaire survey of 26,000 people collected in the Social and Health Disparities Assessment Study on COVID-19 (JACSIS Study), the University of Tsukuba analyzed the impact of social isolation, loneliness, and depression leading to suicidal ideation, and found that 15% of men and 16% of women had suicidal thoughts, respectively. Of these, 23% of men and 20% of women had suicidal thoughts for the first time during the pandemic period. The study also found that loneliness was a larger contributor to suicidal ideation than economic hardship or social isolation. The finding that loneliness has a significant impact on suicidal ideation, either directly or indirectly through depression, suggests that psychological support for people who are lonely is effective not only in combating isolation and loneliness, but also in combating suicide.

It seems that some of the circumstances behind loneliness among young people are unique to Japan. An international survey of loneliness and social isolation in the United States, the United Kingdom, and Japan shows that higher shares in Japan than in the U.S. or U.K. say their loneliness has had a negative impact on their job and their mental health. It found that 44% of people in Japan believe that lonely people mostly have themselves to blame, which is extremely high compared with 23% in the US and 11% in the UK[23]. The survey also found that the frequency of talking to family and friends was lower in Japan than in the US and UK. President Ohzora suggested that “in Japan, even loneliness is said to be one's own responsibility, so it can be difficult to seek advice and it is easy to become trapped”. The Associate Professor Ueda of Waseda University also pointed out that “Japanese society has low relational fluidity, or freedom of choice in interpersonal relationships. Many people have no place to stay other than school or nowhere to go other than school or their workplace. And if they stumble in making friends there, they immediately become isolated. Ja-

pan has become a society that makes it easy to isolate oneself and also makes it difficult to consult with others."[24].

While loneliness is increasing due to the COVID-19 pandemic, it has long been pointed out that many children are feeling lonely in a society in which individuals are isolated and have weak personal links between each other. It is a result of the weakening of traditional human ties based on land and blood amid the breakdown of hierarchy due to increased competition and the development of the internet society[25]. One of the most striking features of Japanese children is the high rate of loneliness they experience. According to a UNICEF survey, the proportion of Japanese children who feel lonely and who feel they have no place to belong, is 29.8% and 18.1% respectively, significantly higher than in other countries[26]. Another report on the well-being of children in developed countries published in 2020 also points out that Japan has a high proportion of adults who are forced to work long hours, making it difficult to maintain a balance between home and work, and children who have a lower sense of belonging to their schools also have a lower satisfaction with their lives[27].

Table 2: A League Table of child well-being outcomes (out of 38 countries)

overall ranking	country	mental well-being	physical health	skills
7	France	7	18	5
14	Germany	16	10	21
19	Italy	9	31	15
20	Japan	37	1	27
21	Korea	34	13	11
27	United Kingdom	29	19	26
30	Canada	31	30	18
36	America	32	38	32

Source: UNICEF, Report Card 16, Worlds of Influence: Understanding What Shapes Child Well-being In Rich Countries

Furthermore, according to the National Survey on the Current Situation of Loneliness and Isolation conducted in 2022 by the Cabinet Secretariat's Office in charge of measures against loneliness and isolation, 5.2% of respondents aged 16 to 19, 7.1% of those aged 20 to 29 and 7.2% of respondents aged 30 to 39 reported feeling lonely, "often or always"[28]. In addition, 1.9% of 16 to 19 year olds, 5.8% of 20 to 29 year olds, and 6.2% of 30 to 39 year olds said they communicated with family and friends 'less than once or twice a week' and were 'likely to be isolated'. In addition, 4.3% of 16 to 19 year olds, 8.3% of 20 to 29 year olds, and 9.2% of 30 to 39 year olds were "very likely to be isolated", meaning that they "do not receive support from government, voluntary or other private organizations and have no one to talk to when they feel anxious or worried". The data also showed that 9.2% of young people aged 30 to 39 were "likely to be isolated"[29].

An online survey of nearly 3,000 people conducted in March 2022 also showed that younger people are also more likely to feel lonely. The proportion of people feeling lonely is 23.7% for those aged 60 and over, but is higher in younger people, with 41.6% of those in their 30s feeling lonely and 42.7% of those in their 20s feeling lonely. Mental health was also worse among the young than among the elderly. The proportion of those considered to be 'moderately to severely depressed' varied widely, from 7.5% of older people to 28.2% of younger people, showing a large gap between the two groups.

3) Suicide prevention Education That does not Progress

Suicide prevention is considered in three stages: Primary prevention is to prevent suicide by disseminating and raising awareness of correct knowledge on suicide prevention, eliminating the causes of suicide and improving the physical environment for suicide prevention at the individual, organizational and societal levels; secondary prevention is to detect people who have thoughts of dying or are depressed and to intervene and respond to them to help them avoid the crisis (counselling system for suicidal people); and tertiary prevention is to detect people who have lost someone to suicide and to intervene and respond to them to help them avoid the crisis (suicide prevention system). Tertiary prevention includes psychological care for those who have lost a loved one to suicide, the prevention of repeated suicide attempts and the prevention of a suicide chain.

Education to help prevent suicide plays an extremely important role. In fact, it has been shown to be effective in that education about thinking about life and death helps people understand the importance of family, life, and living in the present. However, "education on how to give SOS," which is the primary prevention of child suicide, has been provided since the 2016 revision of the Basic Law on Suicide Prevention, but it is basically planned and implemented by each local board of education, and no curriculum or textbooks have been provided by the government, and no lecturers have been dispatched. Schools are still groping in the dark as to which grade level it should be taught at, and what the course content should be, to provide suicide prevention education. The government has not provided any concrete measures, such as who should tell what to whom and how. Even in 2020, there are still few schools that can provide education on how to raise an SOS.

Secondary and tertiary prevention is also criti-

cized for its weak suicide prevention measures, which are mostly left to the private sector and have relied on volunteers since the Showa period (1926-1989). In May 2020, the Ministry of Education issued guidelines to prefectural boards of education to promote support for the school counsellor project, which has been in place since 1995. However, the job of school counsellor varies from school to school, and counsellors often have limited time available, which makes it difficult to spend time with each child, so there are limits to the effectiveness of this support. Investigation also shows that children do not make appropriate use of the opportunities to talk to school counsellors and social workers because they prefer to speak to their friends, who do not know about the available support systems or who to turn to for more expert help[30]. And there is also a tendency to blame victims in Japan.

Furthermore, there are comments from the field that 'as a result of allowing diverse actors to participate in the policy process through meeting and other forums, these forums have become more of a formality and policies are decide by specific actors,' and 'now we have a system where voices are unified and something without any real sense of reality comes down from above and tells us to 'do it'.'[31]

Ms. Takahashi also emphasizes the importance of conducting education on "how to give SOS" and "how to receive SOS lecture" as a set, saying that even if SOS is given, it will not lead to suicide prevention if there is no one competent to receive the SOS.

Conclusion.

The increasing number of child suicides is truly a social problem.

Looking at the current situation of child suicide, there are many cases in which there are no warning signs of suicide. However, in most cases, suicide does not occur suddenly, but is believed to be the result of a certain process. When various stresses accumulate and support is lacking, it becomes difficult to get out of the situation on one's own, leading to depression and eventually suicide. In Japan, unfortunately, the suicide crisis is not a random event. Sadly, many children in Japan who experience a suicidal crisis do not seek professional help, but instead tend to seek help from their friends. Non-professional peers around a person who is contemplating suicide should be able to recognize such a crisis and provide appropriate help, but due to the lack of progress in suicide prevention education, they are often unable to provide appropriate input, leading to suicide in many cases.

Therefore, it can be said that suicide prevention education plays a very important role in preventing child suicide. Teachers are expected to promote awareness of children's mental crises and help-seeking attitudes, while children are expected to receive suicide prevention education that focuses on how to give and receive SOS, and to promote suicide prevention education in cooperation with medical and psychological specialists.

In Japan, it is also considered necessary to take seriously the decline of children's sense of belonging and self-esteem in groups, and to create a diverse support system based on a proper understanding of children's mental health and individuality. In the

field of education, there is a need to break the practice of not recognizing children due to lack of precedent and ensure inclusive education. We believe that creating a tolerant environment that respects the individuality of each child is an extremely important element in the fight against child suicide.

It is also important to collect, consolidate and analyze information about children and to establish a suicide prevention system in cooperation with schools and local communities. In the unlikely event of a child's suicide, it is necessary to conduct a thorough investigation of the actual circumstances of the child's suicide, such as a psychological autopsy, in which an ethical framework is established for each individual case and experts carefully examine the situation.

The risk of suicide increases because the disincentives to "live" outweigh the promoting factors. Mr. Yasuyuki Shimizu, representative of the NPO Suicide Prevention Support Center Lifelink, which works on suicide issues analyzed that those suicidal persons are "over-adapting" because they feel they have to worry about "how they will be judged by others", and as they continue to do so, they fall into a loop where they lose sight of what they are for and who they really are[32].

Given this situation, it should be obvious that an education that frees young people from peer pressure, allows them to express and assert themselves, develops their strengths, and tolerates diversity is of paramount importance in modern society in Japan.

Annotation

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〈研究論文〉

Good Strategy, Good Entrepreneurship? Examining When and How Digital Business Strategy Drives Firm Strategic Entrepreneurship

Wenhai Wan[1]
Taoyan Yang[1*]
Longjun Liu[2]
Xiayi Liu[1]

E-mail：Taoyan Yang: yangtaoyan@stu.hqu.edu.cn
Wenhai Wan: wwhwnwl@hqu.edu.cn
Longjun Liu: Liu_Longjun@yeah.net
Xiayi Liu: 1316136914@qq.com

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The data that support the findings of this study are available from the corresponding author (YT), upon reasonable request.

[1] School of Business Administration, Huaqiao University, Quanzhou, Fujian, China
[2] School of Business, Nanjing University, Nanjing, Jiangsu, China

Abstract

Theory and practice suggest that digital business strategy may help enterprises to seek opportunities in competition. However, there is little knowledge about how and when digital business strategy works in driving strategic entrepreneurship. In order to address this issue, we used dynamic capability theory to discuss how digital business strategy can facilitate strategic entrepreneurship through the mediating role of absorptive capacity while also exploring the moderating role of market turbulence and technology turbulence in the relationship between digital business strategy and absorptive capacity. We test the hypotheses by conducting a survey study which use longitudinal date collected from 290 firms in China with digital features. Findings suggest that digital business strategy promotes the entrepreneurial orientation, accessing relational resources and relational embeddedness in firms, which is achieved mainly through enhanced absorptive capacity. Furthermore, market turbulence strengthens the relationship between digital business strategy and absorptive capacity, whereas technological turbulence plays an inverted U-shaped moderating role. The study contributes valuable theory and management insights concerning digital platform capabilities and strategic entrepreneurship.

Keywords Digital business strategy; Absorptive capacity; Strategic entrepreneurship; Environmental turbulence; Dynamic capabilities

Introduction

In the face of global competition and uncertain environments, including the impact of the crisis, how to seek opportunities and competitive advantages has become an important goal of organizations (McGrath & MacMillan, 2000). In an uncertain environment, firms should not only seek competitive advantages in existing business areas but also identify and make use of new opportunities. In this study, we focus on strategic entrepreneurship as it is closely related to how firms can gain competitive advantages in uncertain environments (Ireland et al., 2003). Strategic entrepreneurship refers to identifying, capturing, and developing new opportunities in the market to pursue competitive advantages and strategic objectives (Hitt et al., 2001; Ireland et al., 2003; Wickham, 2006). In pursuit of competitive advantages, firms actively seek new entrepreneurial opportunities in the external environment and integrate existing resources through internal and external entrepreneurial actions to develop and utilize these opportunities, thereby creating new values and competitive advantages (Hughes et al., 2021). Strategic entrepreneurial actions through the continuous promotion of finding opportunities and utilizing advantages are extensive. For example, the Ant Financial Services Group has developed from the initial subsidiary business of Alibaba into a comprehensive financial platform covering financial management, insurance, credit, and other services. This event is the embodiment of strategic entrepreneurship driving firm development. Huawei keeps the continuous innovation vitality through the strategic entrepreneurial behavior of intrapreneurship: it distributes dividends and equity to the company's internal staff, which reduces its staff turnover, cuts down cooperation expenses, and then stimulates the internal innovation vitality. The literature believes that strategic entrepreneurship enables organizations to keep a balance between seeking opportunities and seeking interests and has a positive impact on organizational performance (Shirokova et al., 2013). Based on the positive influence of strategic entrepreneurship on organizations, how to promote and implement strategic entrepreneurship needs further discussion.

Presently, the most valuable listed companies globally are all built on digitization (Li, 2022). Therefore, in response to environmental turbulence, many firms implement digital business strategy. Digital business strategy refers to a series of strategic plans and actions that firms utilize digital technology and digitized means to achieve business goals, enhance competitiveness, and create value (Mithas et al., 2013). The literature found the potential value of digital business strategy to firms (Hinings et al., 2018; Jun et al., 2022). For example, digital business strategy drives entrepreneurs' opportunity identification and development (Swartz et al., 2022). It also helps firms improve operational efficiency and access to external resources (Li & Chan, 2019) and realize efficient value co-creation (Blaschke et al., 2018) and even firm innovation and performance (Mithas et al., 2013). These studies revealed the importance of digital business strategy for opportunity seeking, value co-creation, and innovation, which all seem to be closely related to strategic entrepreneurship. The reason is that the underlying logic of these studies indicates that firms can build digital business strategy to get closer to opportunities, relationship networks, and resources (de Reuver

et al., 2018; Sutherland & Jarrahi, 2018). Unfortunately, we have not seen the key evidence linking digital business strategy with strategic entrepreneurship (Nambisan, 2017; Srinivasan & Venkatraman, 2018), which makes the potential significance of digital business strategy in strategic entrepreneurship neglected. To better seek opportunities and advantages, firms need to have a good digital business strategy to change their internal resources and capabilities (Mithas et al., 2013). On the one hand, market risks restrict firms' ability to seek business opportunities, so they need to use digital strategies to deepen their identification of strategic information and entrepreneurial resources in the entrepreneurial ecosystem. On the other hand, market competition threatens the existing competitive advantage of firms, so they need to use digital strategies to cooperate with stakeholders to seek new resources and create value. Considering the lack of theoretical insight into the functionality of digital business strategy in strategic entrepreneurship, we will take a step forward in the literature on digital business strategy and strategic entrepreneurship. More importantly, we follow a research agenda from the literature (Nambisan, 2017). The existing literature largely ignored the role of digital technology in entrepreneurship, as they mainly focused on entrepreneurship in a technology-intensive environment (including digital technology). That is, technology is only regarded as the background of empirical work (Bingham & Haleblian, 2012). Concerning the typical characteristics of digital strategies (e.g., openness and interactivity), these are helpful to the potential generation of entrepreneurship and the dynamic emergence and evolution of entrepreneurial opportunities (Nambisan, 2017, p. 11). However, at present, we have not conducted an in-depth discussion on these potential insights. Therefore, we follow the research theme 1 proposed by Nambisan (2017).

Although digital business strategy has advantages in deploying information technology resources (Mithas et al., 2013; Mikalef & Pateli, 2017), if firms cannot digest, absorb, and transform these resources, then benefiting from digital business strategy to promote strategic entrepreneurship seems difficult. The literature showed that although firms' competitive advantages are derived from acquired knowledge and resources, visible results (e.g., performance) also depend on absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002). Absorptive capacity refers to the ability of firms to identify, acquire, process, and apply external knowledge (e.g., external new technological information) (Todorova & Durisin, 2007). If firms have a better absorptive capacity, they are more likely to identify key resources and opportunities in uncertain environments (Schweisfurth & Raasch, 2018; Zahra & George, 2002). The current literature has not identified the value of absorptive capacity in connecting digital business strategy and strategic entrepreneurship (Hughes et al., 2014; Kohtamäki et al., 2020). Therefore, we focus on absorptive capacity as a key intermediary mechanism. Furthermore, the literature suggested that the performance of firms' absorptive capacity is also affected by the dynamic environment (VandenBosch et al., 1999), which is mainly reflected in market turbulence and technological turbulence. Under high market turbulence, the influx of new customers and the rapid change in demand will increase the information load and information update speed on the platform. In this case, identifying and absorbing information on digital business strategy

may become difficult for firms. Under high technological turbulence, the rapid technological change in the industry creates new market opportunities (Chen & Wu, 2011) but increases the cost of firms to build digital business strategy (Slater & Narver, 1994). Therefore, the relationship between digital business strategy and absorptive capacity needs to be considered in the context of market turbulence and technological turbulence. Given that discussing the functionality of dynamic capabilities (digital business strategy and absorptive capacity) in uncertain environments has always been unknown and ongoing, we continue to discuss these key issues.

This study is expected to make the following theoretical and practical implications. First, we discuss the specific relationship between digital business strategy and strategic entrepreneurship. Although previous literature suggested that digital strategy can bring a range of benefits to entrepreneurship, it does not propose the value of some specific strategies in promoting strategic entrepreneurship (Nambisan, 2017; Srinivasan & Venkatraman, 2018). In addition, little attention is paid to the special field of strategic entrepreneurship (entrepreneurial behaviors of incumbent firms) in the digital era. Thus, our efforts can advance the literature on digital entrepreneurship (digital business strategy and strategic entrepreneurship). Second, we propose an intermediary mechanism (absorptive capacity) that has not been discussed in the literature to link digital business strategy with strategic entrepreneurship. The existing literature mainly explored the possible influence mechanism of digitization on entrepreneurship through some cases and qualitative research. However, the role of absorptive capacity (a specific mechanism) between digital business strategy and strategic entrepreneurship is not proven (Hughes et al., 2014; Kohtamäki et al., 2020). Therefore, our efforts can provide new insights into the relationship between digital business strategy and strategic entrepreneurship. Third, we consider the effects of digital business strategy in uncertain environments. The literature on dynamic capability theory called for us to examine the effectiveness of firms' capabilities (e.g., digital business strategy) in specific environments. Thus, our response to the literature promotes the development of dynamic capability theory (Barreto, 2010; Wang & Ahmed, 2007). Finally, our efforts can inspire firms to effectively identify and absorb external resources and opportunities in uncertain environments, which can help them better carry out strategic entrepreneurship in practice.

Theory framework

Mithas et al. (2013) believed that digital business strategy represents the ability to deploy information and communication technology-based resources and combine them with other internal and external resources. As digital business strategy is becoming a new source of competitive advantages in the digital economy (Rai & Tang, 2010), its role has been confirmed in several ways. In terms of firm performance, digital business strategy can have a positive and indirect impact on the performance of small and medium-sized enterprises through network capability (Mithas et al., 2013). In addition, digital business strategy can improve the innovation performance of organizations through organizational readiness (Jun et al., 2022). In terms of innovation, digital orientation and digital capability have a positive impact on digital innovation (Khin & Ho, 2020). Digital capa-

bility also has a significant impact on the sustainable competitive advantage and innovation strategy of firms. In terms of value creation, digital business strategy not only influences value creation by adopting business model innovation (Karimi & Walter, 2021) but also develops new paths of value creation by maintaining a healthy IT infrastructure portfolio to keep smooth connections with dynamic business environments (Li & Chan, 2019). In terms of strategic development, the wider the range of adopting new technologies, the greater the strategic changes (Van-Zeebroeck et al., 2023). In addition, the visualized firm digital twin system provides better practices for strategic management decisions in the changing business world (Yan et al., 2022).

On the whole, research on digital business strategy is abundant, but some limitations exist. First, the research results of digital business strategy are mostly confined to broad topics, such as firm performance, innovation, value creation, or strategic development. However, discussion on some specific strategic behaviors of firms (e.g., strategic entrepreneurship) is limited. Second, new theoretical perspectives are not provided, and the mechanisms of digital business strategy on results are ambiguous. The current literature on entrepreneurial behaviors and results was mainly based on the resource-based view (Conner, 1991; Alvarez & Busenitz, 2001)), network perspective (Aldrich & Dubini, 1991; Hoang & Antoncic, 2003), institutional perspective (Nee, 1992; Hiatt et al., 2018), and others. Therefore, the effectiveness of digital business strategy on strategic entrepreneurship from dynamic capability theory is worth examining. Third, whether digital business strategy will yield benefits in uncertain environments is unclear. In the VUCA era, firms are faced with many uncertainties, and they need to think about how to build dynamic capabilities (e.g., digital business strategy) in uncertain environments to obtain sustainable competitive advantages. However, such questions have not been answered in the current literature. Notably, as an integrated action of strategic and entrepreneurial behaviors taken by organizations in response to uncertain environments, strategic entrepreneurship can motivate firms to obtain competitive advantages in the market (Ziyae & Sadeghi, 2021). In summary, linking digital business strategy, absorptive capacity, and strategic entrepreneurship seems beneficial to breaking through the limitations of the current literature.

Dynamic capabilities are the abilities to integrate, build, and reconstruct the internal and external capabilities of firms to cope with the rapidly changing external environment (Teece et al., 1997). The relationship between dynamic capabilities and the competitive advantages of firms has been widely valued by scholars (Helfat & Peteraf, 2003; Sirmon et al., 2007). Strategic entrepreneurship is characterized by seeking opportunities and seeking advantages simultaneously, which can be divided into three dimensions: entrepreneurial orientation, accessing relational resources, and relational embeddedness (Hughes et al., 2021). Notably, the high uncertainty of entrepreneurial situation requires more flexible strategies (Alvarez & Barney, 2007), which accords with the important connotation of dynamic capabilities. In essence, digital business strategy are the centers of public knowledge, enabling organizations to rapidly encode, store, and distribute large amounts of knowledge based on digital technologies. Moreover, digital business strategy is a trigger for increasing firms' vitality (Mithas et al., 2013). It can facilitate internal communication and resource coordination in

organizations, improve relationship skills, and increase knowledge about partners (Mithas et al., 2013; Helfat & Campo-Rembado, 2016). Therefore, digital business strategy can enhance the internal and external communication capabilities of organizations based on the knowledge provided by digital business strategy. It can also optimize the absorption and distribution of knowledge (Mithas et al., 2013), thereby enhancing absorption capacity. Essentially, absorptive capacity is a specific dynamic capability, and firms with superior absorptive capacity can better identify opportunities and resources and develop new ones (Zahra & George, 2002). Therefore, dynamic capability theory can explain why digital business strategy promotes strategic entrepreneurship by improving absorptive capacity (Barreto, 2010; Teece et al., 1997; Wang & Ahmed, 2007). Nevertheless, the increasingly fierce market competition and the rapid updating of technologies make the organizations face higher market and technological turbulence. Therefore, the impact of digital business strategy on absorptive capacity and even strategic entrepreneurship may be affected by environmental turbulence. To sum up, based on dynamic capability theory (Teece et al., 1997), we systematically explore the influence mechanism of digital business strategy on strategic entrepreneurship, the mediating effect of absorptive capacity, and the moderating effects of market turbulence and technological turbulence, to expand the relevant research on digital business strategy and strategic entrepreneurship.

Hypotheses

Digital business strategy and strategic entrepreneurship

Entrepreneurial orientation is considered a strategic decision-making concept and mode with innovation, advanced actions, and the courage to take risks adopted by firms to enter new business fields (Covin & Slevin, 1989). Digital business strategy has a significant advantage in cultivating the entrepreneurial orientation of firms. First, digital business strategy cultivates firms' innovation ability. Based on the construction of open sharing platforms and technology networks, digital business strategy can effectively mobilize different technologies to be truly integrated and updated. Therefore, when firms have digital business strategy, various integrated technologies will dynamically penetrate into the whole process from creative ideas to commercial applications, thereby continuously stimulating the innovation ability of the firms. Second, digital business strategy enables firms to take action in advance. The network effect formed by digital business strategy effectively integrates and dynamically matches resources at both ends of supply and demand. In addition, the openness of the platforms and the sharing of big data resources provide many entrepreneurial opportunities (Srinivasan & Venkatraman, 2018). Therefore, firms with digital business strategy can obtain entrepreneurial resources and opportunities more efficiently, thereby adopting innovation strategies and establishing competitive advantages earlier and more quickly than their competitors (Rauch et al., 2009). Third, digital business strategy fosters the risk-taking characteristics of firms. Digital business strategy, with their ecosystem hub status, unique digital technologies, and powerful abilities of resource integration, provide entrepre-

neurs with empowerment in technologies, channels, brands, and others. This case will help firms take more risks and be more open and adventurous in developing new products or introducing new technologies. Thus, these arguments lead to the following hypothesis:

Hypothesis 1a: Digital business strategy promotes the entrepreneurial orientation of a firm.

Entrepreneurial resources are one of the key elements for the survival and development of entrepreneurial firms (Timmons, 1999). However, most firms will face serious resource constraints in entrepreneurship. In this case, managers can make strategic choices about relationships by exploiting relational resources to ease the resource constraints in their entrepreneurial resource portfolio. Relational resources reflect firms' ability to establish and maintain stable cooperative relationships with their partners (Wong & Karia, 2010), which is scarce and inimitable. With its unique advantages, digital business strategy provides a feasible way for firms to access relational resources. On the one hand, digital business strategy gather and connect many social participants so that firms can obtain relational resources by contacting social participants. For example, through continuous channel expansion, e-commerce platforms can gather many merchants, whereas continuous advertising and discount promotion also attract several consumers. Therefore, based on the relational resources established by digital business strategy, start-ups can enter e-commerce platforms to provide relevant products or services to meet the matching between supply and demand and gain entrepreneurial advantages. On the other hand, digital business strategy introduce many new social relationships and expand the network of relational resources. Several new jobs have been developed owing to the digital business strategy, such as ride-hailing drivers, food delivery workers, and livestream salesmen. Firms with digital business strategy can take full advantage of these new types of social relationships to acquire and access potential relational resources and then develop their products and services. In summary, these arguments lead to the following hypothesis:

Hypothesis 1b: Digital business strategy promotes the accessing relational resources of a firm.

Relational embeddedness refers to an informal network formed among firms, suppliers, customers, and others. It focuses on the connection of social relationships, which will affect the degree of knowledge sharing (Andersson et al., 2002). Relational embeddedness determines the quantity and quality of resources in the network and then influences the organizational behaviors and performance of firms (Granovetter, 2018). Thus, relational embeddedness seems crucial for strategic entrepreneurship, where resources play an important role (Hughes et al., 2021). Notably, digital business strategy supported by technologies, such as big data, cloud computing, and the Internet of Things, provide good opportunities for firms' relational embeddedness. Digital business strategy are interdependent systems with the characteristics of relational embeddedness (Täuscher & Laudien, 2018). They are interwoven with institutions, markets, and technologies, thereby facilitating firms to build relationships of trust with network participants, such as suppliers, customers,

and large digital platform firms. In addition, digital business strategy have fundamentally changed the competitive relationship between firms and promoted strategic cooperation between competitors to achieve relational embeddedness. Apple, for example, competes fiercely with Google on the operating system but has long used Google as its default search engine. Hence, digital platform-based relational embeddedness among firms replaces the traditional zero-sum game and enables firms to integrate and utilize resources in a wider range, thereby constructing ecological competitive advantages (Alberti-Alhtaybat et al., 2019). Therefore, these arguments lead to the following hypothesis:

Hypothesis 1c: Digital business strategy promotes the relational embeddedness of a firm

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Mediating role of absorptive capacity

The innovation performance of firms depends not only on the accumulated knowledge but also on the ability to transform knowledge into actions (Jantunen, 2005). In addition, the feasible tool of the transformation is the firms' absorptive capacity. Absorptive capacity is the ability to identify, acquire, digest, and apply external new knowledge. Its essence is to apply external information to business activities, promoting firm innovation (Cohen & Levinthal, 1990). In the digital era, digital business strategy can effectively enhance firms' absorptive capacity with its powerful digital technologies. As a shared space, digital business strategy enables coordination and interactions among firms, business partners, consumers, and others and motivate members to share knowledge and experience with others. This kind of cross-departmental and cross-organizational interaction expands the ways firms acquire knowledge and information, which is conducive to firms' efficient identification and acquisition of knowledge and information needed for strategic entrepreneurship. Of course, the developed information networks have brought considerable valuable information but also make firms face the problem of information overload. Through big data analysis, algorithm optimization, and personalized recommendation of digital business strategy, firms can efficiently analyze and integrate the needed data. Then, they match, digest, and apply these data according to their characteristics to accurately provide customers with products and services. For employees, digital business strategy also lowers the threshold of learning so that they can access knowledge in various fields, thereby improving their skills and traits to absorb more knowledge. Therefore, these arguments lead to the following hypothesis:

Hypothesis 2a: Digital business strategy promotes the absorptive capacity of a firm.

Absorptive capacity is a dynamic capability (Wang & Ahmed, 2007). Its positive effects have been proved by many studies in the strategic decision-making of firm innovation. When firms have a higher absorptive capacity, they will predict business opportunities more accurately and make more active use of them (Cohen & Levinthal, 1990). Absorptive capacity also enables firms to implement explorative and exploitative innovation strategies simultaneously, thereby influencing the redesign of existing business models (Müller et al., 2021). As seen above, the current literature reflected the importance of the absorptive capacity for strategic

decision-making in innovation. Therefore, as a decision-making model of innovation strategies (Covin & Slevin, 1989), entrepreneurial orientation can also be positively influenced by absorptive capacity. Specifically, the connotation of absorptive capacity affects all three aspects of entrepreneurial orientation. Among them, the identification and acquisition ability in absorptive capacity can help firms acquire substantial knowledge from the outside to more accurately predict market demand and business opportunities, and they can then take proactive actions. Digestion ability can accelerate firms to solve complex problems, reduce the uncertainty of the entrepreneurial process, and thus increase firms' ability to take risks to explore new business directions. Application ability is conducive to promoting firms to efficiently integrate existing knowledge and apply it to actual operations. It helps to avoid the path dependence of firms on existing knowledge and truly realizes the transformation from knowledge to innovation. Hence, these arguments lead to the following hypothesis:

Hypothesis 2b: Absorptive capacity promotes the entrepreneurship orientation of a firm.

A high level of absorptive capacity may improve the ability of firms to perceive and seize cooperation opportunities with external networks (Terstriep & Lüthje, 2018). The reason is that it increases the compatibility of new knowledge and enables firms to gain value from the new knowledge. Moreover, as an ability related to learning and knowledge, absorptive capacity represents an important part of firms' internal ability. It inspires firms to learn the knowledge they do not have and grasp the nature of future technological development more accurately (Cohen & Levinthal, 1994). As an important external knowledge, relational resources may also be affected by absorptive capacity. First, firms with strong absorptive capacity can efficiently learn and digest external knowledge, thereby establishing a complete knowledge structure, process, and mechanism. The improvement of knowledge reserve enables firms to access more unknown channels and business partners, thereby making it easier to access relational resources. Then, the high knowledge reserve of firms can improve their creativity, help them manage existing relational resources more effectively (Sirmon et al., 2007), and create opportunities and approaches to access relational resources by constructing new relationship models. In addition, as a dynamic capability, absorptive capacity can improve the flexibility of firms. When the relationship between the firms and the outside changes or goes wrong, firms with a high level of absorptive capacity can quickly acquire and apply the latest solutions. Thus, they can timely update and improve their access to relational resources. These arguments lead to the following hypothesis:

Hypothesis 2c: Absorptive capacity promotes the accessing relational resources of a firm.

Relational embeddedness reflects the relationship of knowledge sharing built by cooperative members based on trust and reciprocity. Notably, absorptive capacity is a kind of ability to identify, acquire, digest, and apply knowledge. Hence, its key significance to knowledge is possibly related to relational embeddedness to some extent. Coincidentally,

Kodama (2008) found that the absorptive capacity of firms helps to strengthen the ties between firms and universities, thereby improving the innovation performance of scientific and technological cooperations. This finding provides us with a kind of speculative evidence that absorptive capacity may promote the relational embeddedness of firms. First, firms with strong absorptive capacity can bring the latest knowledge, technology, and resources to their partners to help them benefit from each other. They can also obtain necessary resources from their partners, which is essentially a win–win cooperation. When both sides hope to gain more benefits from each other, they will increase their mutual economic and social interactions in frequency, depth, and breadth, manifested as deeper relational embeddedness. Second, firms with strong absorptive capacity can more easily understand the needs of partners and efficiently provide corresponding products and services. This case is conducive to increasing the trust of partners and their willingness to further cooperation. In addition, the stronger the absorptive capacity of the firms, the better the effect of applying the new knowledge acquired from the relationship networks to the operations management in organizations (Tsai, 2001). Gradually, firms' excellent performance will attract more partners to actively establish relational embeddedness with them. Therefore, these arguments lead to the following hypothesis:

Hypothesis 2d: Absorptive capacity promotes the relational embeddedness of a firm.

For firms, the complexity of digitization means that digital business strategy may not improve firm performance directly but through dynamic capabilities (Mithas et al., 2013). However, many kinds of sub-capabilities of dynamic capabilities exist, and the specific dynamic capability between digital business strategy and strategic entrepreneurship should be further clarified. Notably, some studies showed that firms' innovation performance needs the transforming effect of absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002). Zhao et al. (2021) found that absorptive capacity plays a complete mediating role between internal knowledge sharing and organizational innovation performance. Considering the positive significance of absorptive capacity as a knowledge transforming agent on firm innovation performance, numerous knowledge resources provided by digital business strategy must also be transformed by absorptive capacity. Thus, they are likely to promote strategic entrepreneurship and improve innovation performance.

Specifically, first, the effect of digital business strategy in promoting entrepreneurial orientation can only be realized through knowledge absorption and transformation. The reason is that the key to entrepreneurship orientation is to collect, analyze, and master entrepreneurial information. Second, although digital business strategy provides considerable knowledge and resources, not all resources can allow firms to access relational resources. Instead, it requires firms to screen them to identify and use the information they need. In addition, the premise of relational embeddedness is that firms need to collect and analyze the needs of their business partners in advance. Then, they should digest and apply their knowledge to provide the required services for them. Only in this way can the two parties reach a consensus based on trust and reciprocity. In summary, these arguments lead to the following hypotheses:

Hypothesis 3a–3c: Digital business strategy promotes the entrepreneurship orientation (H3a), the accessing relational resources (H3b), and the relational embeddedness (H3c) of a firm by improving absorptive capacity.

Moderating effect of environmental turbulence

Market turbulence refers to the degree of volatility and unpredictability of the market environment faced by organizations (Sheng et al., 2011). To adapt to the constantly changing market environment, firms need to improve their absorptive capacity to obtain market resources and opportunities (Cohen & Levinthal, 1990). Building digital business strategy is an effective approach, but it requires high costs, as it must deploy information and communication technologies, which may require significant investment (Yunis et al., 2018). Moreover, building digitally connected management systems and participating in digital platform construction require large consumption of resources. Therefore, compared with building digital business strategy, the profit from it that exceeds the cost is the most sought-after goal of firms. When market turbulence is low, consumer demand and external competition are relatively stable (Kibbeling et al., 2013). Firms can make use of the existing ways to obtain relatively stable resources and information at a low cost and cope with the risks brought by external market turbulence according to their inherent resources and capabilities. In this way, the value gained by building digital business strategy at a heavy cost is not significant enough. From another aspect, when market turbulence is high, firms are troubled by unpredictable competition and a shortage of external resources (Sheng et al., 2011). Under such a circumstance, firms are often motivated to build digital business strategy to improve absorptive capacity. That is, they can better integrate and utilize external critical knowledge to reduce the negative impact of high market turbulence. To sum up, these arguments lead to the following hypothesis:

Hypothesis 4a: Market turbulence has a positive moderating effect on the relationship between digital business strategy and absorptive capacity.

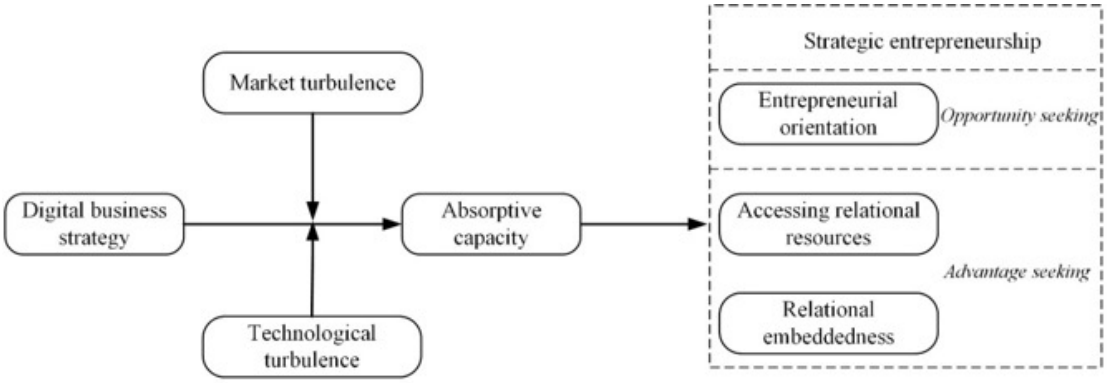
Technological turbulence is defined as the degree of volatility and unpredictability of technological changes in products or services (Terawatanavong et al., 2011). When technological turbulence is low, the value of firms' original technologies can remain unchanged for a long time (Autry et al., 2010). Therefore, firms can use and improve the existing technologies to meet their own development needs, and the value of investing substantial costs to build digital business strategy to enhance absorptive capacity is relatively low. In the case of high technological turbulence, the rapid update of new technologies makes predicting the changing trend of industrial technologies difficult for firms (Wu et al., 2017). As a result, new knowledge brought about by digital business strategy can also become outdated in a short time, and the absorption of outdated knowledge may not be of high value. In addition, absorptive capacity is characterized by path-dependence and time accumulation (Zahra & George, 2002), that is, it is based on firms' experience, and greatly improving it in a short time is difficult. Therefore, when technological turbulence is too sudden and unpredictable, investing in building digi-

tal business strategy to improve absorptive capacity makes little sense. By contrast, when technological turbulence is at a medium level, investing in digital business strategy to promote absorptive capacity may be most beneficial because the technological environment is changing but stable enough (Tsai et al., 2015). In such a technological environment, firms can not only acquire new technologies and resources through digital business strategy but also have enough time to absorb and apply these new resources to maintain competitive advantages. To sum up, these arguments lead to the following hypothesis:

Hypothesis 4b: Technological turbulence has an inverted U-shaped moderating effect on the relationship between digital business strategy and absorptive capacity.

The proposed conceptual model is presented in Fig. 1.

Fig. 1 The proposed conceptual model



Method

Sample and procedure

We obtained firm data through two waves of surveys, which started in April 2020 and ended in November 2021. The samples were mainly from firms in central, eastern, and southeast China, mainly involving manufacturing, service industries, and the Internet. We aimed to explore how digital business strategy could affect strategic entrepreneurship by improving absorptive capacity. Thus, the samples we chose needed to have some digital features. For example, these firms were building digital business strategy, relying on them to make management decisions and obtain information about partners or customers. We regarded absorptive capacity as the key link between digital business strategy and strategic entrepreneurship. Therefore, we also considered the initiative of firms in enhancing absorptive capacity and carrying out strategic entrepreneurship. Generally, these firms we chose were appropriate.

To obtain reliable data, the participants were mainly middle and senior managers who have a comprehensive grasp of firm information, such as CEO and senior managers.

We built a data survey bridge with the help of some professors, MBA students, and businessmen. Before the survey, we communicated with the senior managers and got their approval. Then, we sent the questionnaires to the respondents via e-mail and told them what they needed to pay attention to in the answering process. Finally, participants returned the completed questionnaires through e-mail. A potential response bias may exist in the questionnaire survey, so the potential response bias was reduced. First, we offered a reward of 50 yuan to every manager who completed the questionnaires to encourage them to answer these questions as truthfully as possible. Second, we believed that compared with material incentives, these managers were more interested in how to conduct daily business management and operation. We have long been in close contact with firms in many business fields, particularly some high-tech and Internet firms. During this period, we have accumulated considerable practical experience. Continuous cultivation in academic research also provided a solid theoretical foundation and knowledge. Therefore, we promised to provide free and open online courses (strategic management and human resource management) for every manager who completed the questionnaires to guide them to answer the questions truthfully. Finally, according to the ethical principles of the investigation, we explicitly kept confidential information in the questionnaires.

Using cross-sectional data to reflect the causal relationship between variables was difficult, and a multi-stage longitudinal investigation was feasible (Kaynak, 2003). Therefore, to improve the reliability of the results and avoid common method deviation, we collected data in two waves. In the first wave, we asked the managers to complete the scales of digital business strategy, absorptive capacity, market turbulence, technological turbulence, and control variables (firm information, competition intensity, and legal inefficiency). In the second wave, we asked managers to complete the strategic entrepreneurship scale (three dimensions). We started the first data collection in April 2020, with a total of 364 questionnaires distributed and 349 returned. The valid questionnaires after excluding unqualified ones were 323. The eliminating rules were mainly eliminating the incomplete answers, continuous answers (8 items or more), and questionnaires with evident deviations in feedback. Before the empirical study, we conducted a long-term follow-up survey and case interviews with some firms. We found that most firms generally take at least one year to build digital business strategy to produce results. Therefore, the second collection began in June 2021, and we asked managers to complete the strategic entrepreneurship scale. Based on the valid sample in the first wave, 323 questionnaires were distributed, 308 were collected, and 290 were valid. Finally, we numbered and matched all the data and input them into the database. For the sample matching, we asked participants to leave the last four digits of their mobile phone numbers in both waves.

In this study, the industry distribution was diverse, with the service accounting for 7.6%, manufacturing accounting for 29.3%, Internet accounting for 40.7%, and other industries accounting for 22.4%. For the firm scale, firms with 100–300

employees accounted for 48.7%. For the firm age, 43.5% have been established for more than 10 years. In addition, the geographical distribution of firms was relatively dispersive, accounting for 31.4% in the eastern, 32.1% in the central, 26.6% in the southern, and 10.0% in other regions. In conclusion, the firms were of different sizes, ages, industries, and regions (Table 1), which showed that the samples were highly representative and convincing.

Table 1 Basic characteristics of samples

Characteristic	Type	Frequency	Percentage
Firm type	Internet	22	7.60%
	Manufacture	85	29.30%
	Service Sector	118	40.70%
	Other	65	22.40%
Scale	Under 100 people	99	34.10%
	101~200 people	77	26.60%
	201~300 people	64	22.10%
	More than 300 people	50	17.20%
Firm age	Under 5 years	48	16.50%
	5 ~ 10 years	116	40.00%
	11 ~ 15 years	86	29.70%
	Over 15 years	40	13.80%
Location	East China	91	31.40%
	Central China	93	32.10%
	South China	77	26.60%
	Other	29	10.00%

Note: N = 290.

Variables

The scales used in this study mainly referred to foreign mature scales and were designed in the form of a Likert seven-point scale, with scores ranging from 1 (totally disagree) to 7 (totally agree). These scales need to be appropriately revised according to the research context in this study, which was beneficial to improving the reliability of the research data. We mainly followed the following steps. Before formulating the scales, we invited teachers from English major and management major to translate the scales in a forward-backward way, then we sent the translated scales and the original foreign scales to the other two teachers from English major and management major to discuss and revise. Finally, we formed the final Chinese scales. Then we revised and improved the scale items through expert consultation and structured interviews. Lastly, through a small-scale preliminary survey of service firms in Xiamen and Quanzhou, and using statistical methods such as exploratory factor analysis, we revised and improved the scales again to form the final survey questionnaires.

The scale of digital business strategy (DBS) came from the research of Ukko et al. (2019) containing 8 items with a typical item such as “Our company is familiar with the development and use of digital technology”. In this study, Cronbach’s α was 0.840. Since the establishment and implementation of digital business strategy cannot be completed in a short time, the words “recent three years” are added and highlighted in the questionnaire description. We referred to the multi-dimensional absorptive capacity (AC) scale developed by Flatten et al. (2011), which mainly evaluated the ability of firms to absorb, assimilate, transform and develop knowledge and information. We focused on the comprehensive absorptive capacity of firms, so we integrated it into one dimension. The scale consisted of 14 items, such as "our company can work more effectively by adopting new technologies". Cronbach's α was 0.965 in this study. For the measurement of market turbulence (MT) and technological turbulence (TT), we referred to the scale developed by Jaworski and Kohli (1993). There were six items in the market turbulence, such as "in the industry, customers' product preferences will change with time". Technological turbulence consisted of five items, such as "it is difficult for us to predict how the technology of our industry will change in the future". In this study, Cronbach's α was 0.871 and 0.824 respectively. Drawing on the relevant literature (Hughes et al., 2021), we divided strategic entrepreneurship (SE) into two aspects: opportunity seeking and advantage seeking, including entrepreneurial orientation (EO), accessing relational resources (AR), and relational embeddedness (RE). For entrepreneurial orientation, we referred to the measurement of Covin and Slevin (1989), which contained 9 items. A typical item such as "we often try new ideas", and Cronbach's α was 0.915 in this study. For accessing relational resources, we referred to the measurement of Sarkar et al. (2001), which contained five items. A typical item such as "the stakeholders of firms depend on each other to a certain extent to achieve higher competitive performance", and Cronbach's α was 0.876 in this study. Finally, we referred to Andersson et al. (2002) to measure relational embeddedness. This dimension contained five items with a typical item such as "keeping a close relationship with other firms can help us improve our business performance". Cron-

bach's α was 0.820 in this study.

Considering that firms' absorptive capacity and strategic entrepreneurship may be affected by firm type, scale, age, and location, we took them as control variables to make the results more reliable. In addition, according to the research of Bao et al. (2020), we also considered the influence of competitive intensity and legal inefficiency. For competitive intensity, we referred to Jaworski and Kohli (1993), which contained five items. A typical item such as "the competition in this industry is cruel", and Cronbach's α was 0.868 in this study. Referring to Bao et al. (2020), the legal inefficiency evaluated the degree of illegal and unfair behaviors (such as piracy and counterfeiting) in the industry. The scale contained six items, like "many illegal competitive behaviors in our industry, such as fraud and imitation", and Cronbach's α was 0.905 in this study.

Results

Reliability and validity analysis

In this study, the reliability of the formal survey data was tested again through reliability and validity (Table 2). The scales were found to pass factor analysis with factor loading ranging from 0.695 (> 0.5) to 0.821. It was also found that Cronbach's α value, factor loading, construct reliability (CR) and average variance extracted (AVE) of all factors met the requirements. Secondly, through the Harman single-factor test (Harman, 1976), factor analysis was conducted on all items of nine variables in the collected data. The first main component obtained without rotation accounted for 27.56%, which did not exceed the critical value of 40%. By adding latent factors (Podsakoff et al., 2003), it was found that the variance of the goodness of the model fit was $\Delta(\chi 2/df) = -0.011$, $\Delta CFI = 0.002$, $\Delta TLI = 0.001$ and $\Delta RMSEA = 0.000$, and the variance was not significant. Therefore, the common method bias was well controlled.

Finally, to examine the discriminant validity among variables, we made a confirmatory factor analysis (Table 3). The results showed that the fitting degree of the single-factor model was the worst, while the fitting degree of the nine-factor model ($\chi 2/df=1.470$, CFI = 0.926, TLI = 0.923, SRMR = 0.047, RMSEA = 0.040) met the requirements and was superior to other models. It indicated that the six factors in this study had great discriminant validity.

Table 2 Scale items and exploratory factor analysis

Variable	Item	Loading	α	CR	AVE	Variable	Item	Loading	α	CR	AVE
Digital business strategy	DBS1	0.763	0.920	0.935	0.645	Entrepreneurial orientation	EO1	0.775	0.915	0.930	0.598
	DBS2	0.827					EO2	0.83			
	DBS3	0.803					EO3	0.74			
	DBS4	0.802					EO4	0.834			
	DBS5	0.797					EO5	0.735			
	DBS6	0.844					EO6	0.775			
	DBS7	0.806					EO7	0.768			
	DBS8	0.782					EO8	0.802			
Absorptive capacity	AC1	0.877	0.965	0.969	0.692		EO9	0.695			
	AC2	0.857									
	AC3	0.84				Accessing relational resources	AR1	0.697	0.876	0.912	0.678
	AC4	0.875					AR2	0.828			
	AC5	0.81					AR3	0.921			
	AC6	0.844					AR4	0.829			
	AC7	0.841					AR5	0.827			
	AC8	0.836				Relational embeddedness	RE1	0.728	0.820	0.877	0.590
	AC9	0.787					RE2	0.74			
	AC10	0.802					RE3	0.865			
	AC11	0.818					RE4	0.776			
	AC12	0.792					RE5	0.725			
	AC13	0.851				Market turbulence	MT1	0.782	0.871	0.903	0.609
	AC14	0.817					MT2	0.753			
Legal inefficiency	LI1	0.813	0.868	0.919	0.656		MT3	0.81			
	LI2	0.861					MT4	0.782			
	LI3	0.775					MT5	0.761			
	LI4	0.812					MT6	0.793			
	LI5	0.783				Technological turbulence	TT1	0.721	0.824	0.877	0.590
	LI6	0.813					TT2	0.742			
Competitive intensity	CI1	0.81	0.905	0.915	0.683		TT3	0.758			
	CI2	0.855					TT4	0.779			
	CI3	0.81					TT5	0.836			
	CI4	0.833									
	CI5	0.824									

Notes: N = 290; Construct reliability (CR), average variance extracted (AVE).

Table 3 Results of confirmatory factor analysis

Model	*χ2/df*	*CFI*	*TLI*	*SRMR*	*RMSEA*
Nine-factor model: DBS, AC, EO, AR, RE, MT, TT, CI, LI	1.470	0.926	0.923	0.047	0.04
Eight-factor model: DBS+AC, EO, AR, RE, MT, TT, CI, LI	1.838	0.868	0.862	0.058	0.053
Seven-factor model: DBS+AC+EO, AR, RE, MT, TT, CI, LI	2.820	0.785	0.775	0.078	0.068
Six-factor model: DBS+AC+EO+AR, RE, MT, TT, CI, LI	2.658	0.738	0.727	0.081	0.075
Five-factor model: DBS+AC+EO+AR+RE, MT, TT, CI, LI	2.832	0.710	0.698	0.088	0.079
Four-factor model: DBS+AC+EO+AR+RE+MT, TT, CI, LI	3.205	0.650	0.637	0.100	0.087
Three-factor model: DBS+AC+EO+AR+RE+MT+TT, CI, LI	3.437	0.612	0.599	0.105	0.091
Two-factor model: DBS+AC+EO+AR+RE+MT+TT+CI, LI	3.798	0.555	0.539	0.117	0.098
One-factor model: DBS+AC+EO+AR+RE+MT+TT+CI+LI	4.316	0.472	0.454	0.128	0.107

Notes: N = 290; Digital business strategy (DBS), absorptive capacity (AC), entrepreneurial orientation (EO), accessing relational resources (AR), relational embeddedness (RE), market turbulence (MT), technical turbulence (TT), legal inefficiency (LI), competitive intensity (CI).

Descriptive statistics and correlation analysis

The purpose of descriptive statistical analysis (Table 4) was to preliminarily observe whether these samples were biased. We found that the mean value of the main variables in the model was between 4.76 and 5.24, and the standard deviation was between 0.69 and 1.21, which indicated that the investigated firms had initially built digital business strategy, and had a high level of absorptive capacity. In addition, the standard deviations of these variables were within a reasonable range, which indicated that there was no obvious deviation in the distribution of these samples. In all, these samples were appropriate and representative. Table 4 reported the correlation analysis. It showed that DBS was positively correlated with EO ($r = 0.463$, $p < 0.001$), AR ($r = 0.438$, $p < 0.001$), and RE ($r = 0.467$, $p < 0.001$). In addition, DBS was positively correlated with AC ($r = 0.657$, $p < 0.001$). AC was positively correlated with EO ($r = 0.489$, $p < 0.001$), AR ($r = 0.501$, $p < 0.001$), and RE ($r = 0.501$, $p < 0.001$). The verification of the correlation between variables provided preliminary evidence for the research hypotheses, laying a foundation for the follow-up tests.

Table 4 Descriptive statistics and correlation analysis of variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1.type													
2.scale	-0.074												
3.year	0.085	0.169**											
4.location	0.091	0.049	0.085										
5.DBS	-0.051	-0.054	0.035	-0.208***									
6.AC	-0.021	-0.051	0.003	-0.107	0.657***								
7.EO	-0.012	-0.1	-0.028	-0.031	0.463***	0.489***							
8.AR	0.003	-0.002	0.002	-0.087	0.438***	0.501***	0.499***						
9.RE	-0.005	0.008	0.006	-0.057	0.467***	0.501***	0.554***	0.457***					
10.MT	-0.038	-0.007	0.085	-0.094	0.167**	0.179**	0.089	0.051	-0.056				
11.TT	-0.046	-0.046	-0.041	0.032	-0.075	-0.220***	-0.201**	-0.094	-0.181**	0.012			
12.CI	0.048	-0.045	-0.012	-0.150*	0.050	0.048	-0.124*	-0.133*	-0.255***	0.165**	0.056		
13.LI	0.059	-0.076	0.020	-0.127*	0.085	0.030	-0.075	-0.011	-0.288***	0.189**	0.056	0.386***	
M	2.78	2.22	2.41	2.15	5.11	5.14	5.05	4.93	5.24	5.17	5	4.76	4.82
SD	0.88	1.09	0.92	0.98	0.89	0.92	0.78	0.87	0.69	0.9	0.79	1.12	1.21

Notes: N = 290; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Mean value (M), standard deviation (SD); Digital business strategy (DBS), absorptive capacity (AC), entrepreneurial orientation (EO), accessing relational resources (AR), relational embeddedness (RE), market turbulence (MT), technical turbulence (TT), legal inefficiency (LI), competitive intensity (CI).

Endogeneity test

In this study, the Durbin-Wu-Hausman test was used to evaluate endogeneity (Tang & Rai, 2012). Because AC was a mediating latent variable, according to the simultaneous equation, we only needed to test the endogeneity of the moderators. The MT and TT were taken as dependent variables, and DBS and other control variables were taken as independent variables for regression so that the residual errors of MT and TT were obtained and retained. Then, EO, AR, and RE were regressed respectively, and the coefficients of the above residuals were obtained. The results showed that the residual error of MT had no significant regression coefficients on EO (β = 0.025, $p > 0.05$), AR (β = -0.025, $p > 0.05$) and RE (β = -0.020, $p > 0.05$), and the residual error of TT had no significant regression coefficients on EO (β = -0.009, $p > 0.05$), AR (β = 0.016, $p > 0.05$) and RE (β = -0.042, $p > 0.05$), which indicated that this study had a good control of endogeneity.

Hypothesis test

After incorporating the control variables into the model, this study used SPSS 24 software to carry out regression analysis to test the hypotheses (Table 5). First, we found that DBS had a significantly positive impact on EO (β = 0.424, $p < 0.001$, M5), AR (β = 0.434, $p < 0.001$, M9), and RE (β = 0.390, $p < 0.001$, M13), so H1a, H1b and H1c were confirmed. At the same time, DBS had a significantly positive effect on AC (β = 0.690, $p < 0.001$, M2), so H2a was confirmed. In addition, AC had a significantly positive effect on EO (β = 0.419, $p < 0.001$, M6), AR (β = 0.475, $p < 0.001$, M10), and RE (β = 0.387, $p < 0.001$, M14), so H2b, H2c and H2d were confirmed. The above direct effect test results provided the basis for the following mediating effect test.

We used hierarchical regression (Baron & Kenny, 1986) to test the mediating role of AC (Table 5). Regarding EO as the dependent variable, the regression results showed that DBS had a significant positive impact on EO, but the coefficient decreased (β = 0.236, $p < 0.001$, M7), and AC had a significant positive impact on EO (β = 0.273, $p < 0.001$, M7), so AC played a mediating role between DBS and EO. Regarding AR as the dependent variable, the regression results showed that DBS had a significant impact on AR (β = 0.186, $p < 0.01$, M11), but the coefficient decreased, and AC had a significant positive impact on AR (β = 0.360, $p < 0.001$, M11), so AC played a mediating role between DBS and AR. Lastly, we regarded RE as the dependent variable. The regression results showed that the regression coefficient of DBS was significant (β = 0.215, $p < 0.001$, M15), but the coefficient decreased, and AC had a significant positive impact on RE (β = 0.254, $p < 0.001$, M15), so AC played a mediating role between DBS and RE. Therefore, H3a, H3b, and H3c were confirmed.

Table 5 Regression analysis results

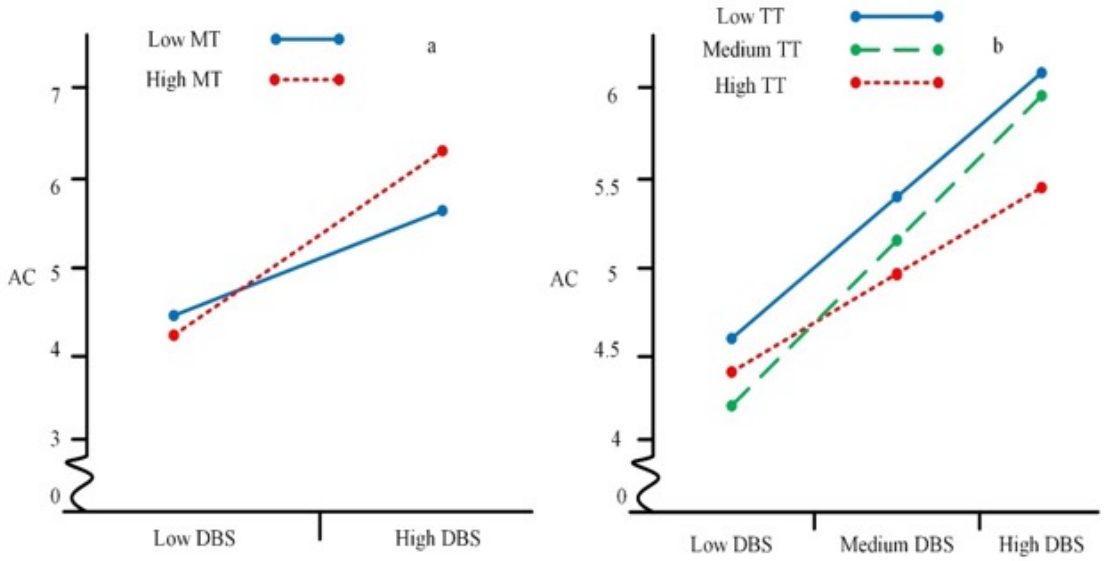
Variable	AC			EO			AR				RE				
Model	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Constant	5.311	1.594	5.134	5.870	3.586	3.647	3.151	5.554	3.214	3.031	2.639	6.546	4.443	4.492	4.039
Type	-0.020	0.012	0.027	-0.006	0.014	0.003	0.011	0.017	0.038	0.027	0.033	0.021	0.039	0.029	0.036
	(-0.063)	(-0.048)	(-0.046)	(-0.053)	(-0.047)	(-0.046)	(-0.045)	(-0.059)	(-0.053)	(-0.051)	(-0.050)	(-0.045)	(-0.039)	(-0.038)	(-0.037)
Scale	-0.041	-0.011	-0.008	-0.075	-0.057	-0.058	-0.054	-0.001	0.018	0.019	0.022	-0.009	0.009	0.007	0.011
	(-0.051)	(-0.039)	(-0.037)	(-0.043)	(-0.038)	(-0.037)	(-0.036)	(-0.047)	(-0.043)	(-0.041)	(-0.041)	(-0.036)	(-0.031)	(-0.031)	(-0.030)
Year	0.022	-0.020	-0.061	-0.006	-0.031	-0.015	-0.026	0.007	-0.020	-0.003	-0.012	0.014	-0.010	0.005	-0.005
	(-0.06)	(-0.046)	(-0.044)	(-0.051)	(-0.045)	(-0.044)	(-0.043)	(-0.057)	(-0.051)	(-0.049)	(-0.048)	(-0.043)	(-0.037)	(-0.036)	(-0.035)
Location	-0.094	0.031	0.051	-0.038	0.039	0.001	0.030	-0.097	-0.018	-0.052	-0.029	-0.084*	-0.013	-0.048	-0.021
	(-0.057)	(-0.044)	(-0.042)	(-0.048)	(-0.043)	(-0.042)	(-0.041)	(-0.053)	(-0.049)	(-0.046)	(-0.046)	(-0.041)	(-0.036)	(-0.034)	(-0.034)
CI	0.025	0.026	0.006	-0.084	-0.083*	-0.094*	-0.090*	-0.128*	-0.127**	-0.140**	-0.137**	-0.114**	-0.114**	-0.124***	-0.120***
	(-0.053)	(-0.040)	(-0.039)	(-0.045)	(-0.039)	(-0.039)	(-0.038)	(-0.050)	(-0.045)	(-0.043)	(-0.042)	(-0.038)	(-0.033)	(-0.032)	(-0.034)
LI	0.002	-0.028	-0.016	-0.028	-0.045	-0.028	-0.038	0.027	0.009	0.026	0.019	-0.135***	-0.152***	-0.136***	-0.145***
	(-0.049)	(-0.037)	(-0.036)	(-0.041)	(-0.036)	(-0.036)	(-0.035)	(-0.046)	(-0.041)	(-0.040)	(-0.039)	(-0.035)	(-0.030)	(-0.029)	(-0.029)
DBS		0.690***	0.788***		0.424***		0.236***		0.434***		0.186**		0.390***		0.215***
		(-0.048)	(-0.059)		(-0.047)		(-0.059)		(-0.053)		(-0.066)		(-0.038)		(-0.028)
AC						0.419***	0.273***			0.475***	0.360***			0.387***	0.254***
						(-0.044)	(-0.056)			(-0.048)	(-0.063)			(-0.036)	(-0.046)
MT			0.110*												
			(-0.046)												
MT × DBS			0.184**												
			(-0.053)												
TT			-0.163**												
			(-0.054)												
TT2			0.013												
			(-0.047)												
TT × DBS			-0.055												
			(-0.059)												
TT2 × DBS			-0.165**												
			(-0.058)												
R^2	0.015	0.435	0.506	0.030	0.251	0.270	0.309	0.031	0.218	0.281	0.301	0.121	0.356	0.379	0.42
ΔR^2	0.015	0.420	0.491	0.030	0.220	0.240	0.058	0.031	0.187	0.250	0.082	0.121	0.235	0.258	0.064
F	0.730	31.041***	21.724***	1.476	13.466***	14.891***	15.700***	1.503	11.253***	15.753***	15.112***	6.494***	22.297***	24.568***	25.424***

Notes: N = 290; Digital business strategy (DBS), absorptive capacity (AC), entrepreneurial orientation (EO), accessing relational resources (AR), relational embeddedness (RE), market turbulence (MT), technical turbulence (TT), legal inefficiency (LI), competitive intensity (CI); * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Moderating effect test

Before testing, the independent variable and moderators were processed centrally, and the interaction items were generated. Test for the moderating effect of MT: the interaction between MT and DBS had a significant positive impact on AC ($\beta = 0.184$, $p < 0.01$, M3), which indicated that MT had a positive moderating effect between DBS and AC, and H4a was confirmed. Test for the moderating effect of TT: the interaction between TT and DBS had no significant influence on AC ($\beta = -0.055$, $p > 0.05$, M3), but the interaction between DBS and the square of TT had a negative influence on AC ($\beta = -0.165$, $p < 0.01$, M3), indicating that TT played an inverted U-shaped rather than a linear moderating role between DBS and AC. Therefore, H4b was confirmed. Lastly, we drew a simple moderating effect diagram (Fig. 2).

Fig. 2 The moderating effect of MT and TT



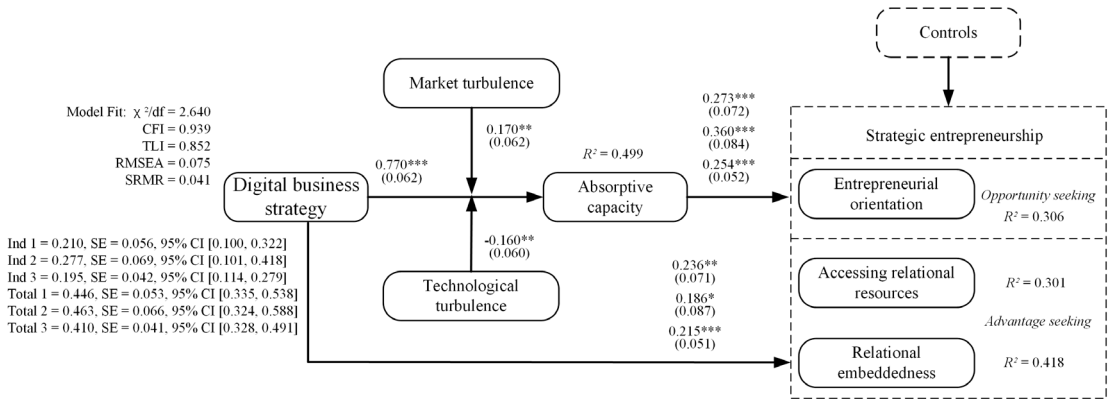
Robustness test

According to the practices in the literature (Chen & Liu, 2020), we used structural equation model (SEM) of Mplus7.4 software to check the robustness. We used bootstrap method to test the mediation effect through 5000 repeated sampling, and the confidence interval was set to 95%. The fitting index of the model ($\chi 2/df = 2.640$, CFI = 0.939, TLI = 0.852, SRMR = 0.041, RMSEA = 0.075) basically met the requirements. We found that (Figure 3) DBS had a significant positive impact on EO ($\beta = 0.236$, SE = 0.071, $p < 0.01$), AR ($\beta = 0.186$, SE = 0.087, $p < 0.05$), and RE ($\beta = 0.215$, SE = 0.051, $p < 0.001$). Therefore, H1a, H1b and H1c were confirmed. Then, DBS had a significant positive impact on AC ($\beta = 0.770$, SE = 0.062, $p < 0.001$), and H2a was confirmed. At the same time, we found that AC had a significant positive impact on EO ($\beta = 0.273$,

SE = 0.072, p < 0.001), AR (β = 0.360, SE = 0.084, p < 0.001), and RE (β = 0.254, SE = 0.052, p < 0.001). Therefore, H2b, H2c and H2d were confirmed.

We also found that digital business strategy positively affected EO (β = 0.210, SE = 0.056, 95%CI[0.100, 0.322]), AR (β = 0.277, SE = 0.069, 95%CI[0.149, 0.418]), and RE (β = 0.195, SE = 0.042, 95%CI[0.114, 0.279]) through AC. It proved that AC played a mediating role between DBS and the three dimensions of strategic entrepreneurship (EO, AR, RE). Therefore, H3a, H3b and H3c were verified again. In addition, MT had a positive moderating effect (β = 0.170, SE = 0.062, p < 0.01) and TT had an inverted U-shaped moderating effect (β = -0.160, SE = 0.060, p < 0.01), so H4a and H4b were verified again. In conclusion, this study passed the robustness test (Fig. 3).

Fig. 3 The robustness test



Discussion

Conclusions

Based on dynamic capability theory, we link digital business strategy, absorptive capacity, market turbulence, technological turbulence, and strategic entrepreneurship and draw the following conclusions through empirical research. First, digital business strategy promotes firms' strategic entrepreneurship. Specifically, digital business strategy realizes digital technology integration and innovation and provides firms with the latest entrepreneurial resources and opportunities, which are conducive to the entrepreneurial orientation of firms. In addition, the network effect of digital business strategy provides firms with opportunities to connect multiple platform participants. These opportunities allow firms to freely build social relationships to access relational resources efficiently. In addition, as digital business strategy is characterized by collaboration and sharing, firms must carry out in-depth communication and cooperation based on mutual trust and reciprocity to achieve win–win results, which will lay a good foundation for their relational embeddedness. Second, absorptive capacity has a mediating

effect between digital business strategy and strategic entrepreneurship of firms. Although digital business strategy provides firms with substantial knowledge and resources, it also relies on the ability to transform knowledge into actions (Jantunen, 2005). Absorptive capacity is a dynamic capability that plays a key role in identifying, acquiring, digesting, and applying resources. It can provide an impetus for firms to implement strategic entrepreneurship, thereby forming competitive advantages. Third, market turbulence has a positive moderating effect between digital business strategy and absorptive capacity, whereas technological turbulence has an inverted U-shaped moderating effect. When market turbulence is low, firms can implement or improve their market strategies according to the existing market information, instead of spending too much cost and energy to build digital business strategy. However, as market turbulence increases, market demand becomes unpredictable. In this case, firms need to develop digital business strategy to increase absorptive capacity so that they can continuously access critical market information. When the technological turbulence is low, the existing technologies can meet the technical requirements of the firms. However, when the technological turbulence is very high, the technologies change rapidly and become obsolete easily. On the contrary, absorptive capacity has the characteristics of path-dependence and time-accumulation, thereby making most of the technologies absorbed by firms obsolete. Hence, investments in digital business strategy will lead to the greatest return when technological turbulence is at a moderate level. The reason is that firms need to rely on the absorptive capacity to learn and apply new technologies in response to the moderate technological turbulence. Moreover, they do not have to worry too much about the risk of absorbing outdated technologies.

Theoretical implications

This study provides important theoretical implications in several ways. First, the link between digital business strategy and strategic entrepreneurship has expanded and enriched the literature on digital capabilities and strategic entrepreneurship. Existing relevant literature on digital business strategy was mostly reflected in organizational achievements, such as firm performance, innovation, value creation, and strategic development (Mithas et al., 2013; Khin & Ho, 2020; Karimi & Walter, 2021; VanZeebroeck et al., 2023). Studies on specific behaviors before the generation of organizational achievements are limited. Strategic entrepreneurship has the interactive connotation of taking entrepreneurial actions from a strategic perspective and taking strategic actions from an entrepreneurial perspective, including two specific behaviors, opportunity seeking and advantage seeking. In reality, strategic entrepreneurship is one of the basic driving factors of firms' competitive advantages, profitability, survival, and growth (Ireland et al., 2001). Therefore, this study on the relationship between digital business strategy and strategic entrepreneurial behaviors may provide a better insight into the internal logic of firms' development. Second, from the perspective of dynamic capability theory, absorptive capacity is introduced as an intermediary variable to open the black box that digital business strategy affects strategic entrepreneurship. Dynamic capabilities occupy a central position in the field of entrepreneurship research characterized

by dynamics and strategic management research on seeking competitive advantages (Teece, 2016). Therefore, dynamic capabilities provide a logical basis for explaining strategic entrepreneurship. In addition, Mithas et al. (2013) pointed out that future studies on digital business strategy should consider more dynamic capabilities to analyze the potential intermediary mechanisms of the digital business strategy. Therefore, this study takes a specific dynamic capability, that is, absorptive capacity, as an intermediary variable between digital business strategy and strategic entrepreneurship. In this way, this study not only responds to the call of Mithas et al. (2013) but can also better explain the specific transformation process from digital business strategy to strategic entrepreneurship. Third, market turbulence and technological turbulence are introduced as the moderating variables to expand the boundary conditions between digital business strategy and absorptive capacity. With the change in the economic model and the acceleration of firm transformation, firms need to consider environmental factors when carrying out strategic behaviors (Li & Atuahene-Gima, 2001). Current studies on absorptive capacity mostly take individual factors as boundary conditions but lack the consideration of the overall external environment. In the present study, we draw the conclusions that digital business strategy has different effects on absorptive capacity under the conditions of market and technological turbulence. To some extent, the conclusions are conducive to clarifying different boundary conditions between digital business strategy and absorptive capacity. They will help to enrich the research on boundary conditions of absorptive capacity.

Managerial implications

Firms should attach importance to the construction of digital business strategy and focus on improving digital business strategy. First, firms should cultivate their own digital corporate culture and values and then scientifically set up phased digital strategic goals and plans. In addition, firms should pay attention to the development and maintenance of relational resources to empower their digital construction. The options include building their digital business strategy or actively participating in digital platform cooperations, carrying out industry–university–research collaboration, introducing digital technologies and talents, and others. Improving digital business strategy in a short time is not easy. Firms should cultivate dynamic capabilities to cope with the changes brought by the external environment and achieve a spiral rise in the long run.

Firms should improve absorptive capacity to transform external knowledge and resources into competitive advantages. Firms should also actively strengthen the connection with external stakeholders (e.g., customers, scientific research institutions, and business partners). Then, they should carry out in-depth cooperation and high-quality relational embeddedness based on trust and reciprocity to increase the opportunities to acquire the latest knowledge and resources. In addition, the rules and atmosphere of knowledge sharing need to be established within the firms to promote the digestion and integration of new knowledge. Most importantly, firms should integrate motivation into the process of knowledge application. For example, they can implement a reward system for product research and development, incorporate innovation performance

into performance appraisal and promotion of employees, and create a working atmosphere that encourages trials and errors.

Firms should always pay attention to the external market and technological trends and dynamically adjust their business strategies. When market turbulence is low, firms can build learning groups to gradually improve the overall grasp of market information. When market turbulence is high, firms should not only pay attention to the cultivation of digital business strategy but also increase the development and maintenance of marketing channels and recruit or train more talents to absorb more market information. When technological turbulence is low, firms can maintain their development by keeping the existing technologies. When technological turbulence is moderate, the investment in technologies produces the greatest benefit. Therefore, firms should increase their investment in digital business strategy and increase the research and development of digital technologies. For example, they can introduce the latest technologies at home and abroad, build innovative incubators, and support employee intrapreneurship. When technological turbulence is high, firms can grasp the dynamic trend of technologies through increasing communication with partners and regularly observing the new direction of the industry.

Limitations and future research

Although this study has made some implications, some limitations still exist. First, the data used in this study were collected from April 2020 to November 2021. The data from a one-year interval cannot strictly be used to evaluate the long-term causal relationship between variables. Therefore, future research can extend the timeline and collect new data through a longitudinal survey. In addition, for the questionnaire survey, avoiding respondent bias is difficult, and objective second-hand data can help verify the results. Second, we use the dynamic capability theory to explain the mechanism that digital business strategy affects strategic entrepreneurship through absorptive capacity in uncertain environments (market and technological turbulence). Although the perspective works, it may not be unique. We believe that other perspectives, such as social network theory, strategic choice theory, or diffusion of innovations theory, can help us provide more new insights for understanding the relationship between digital business strategy and strategic entrepreneurship. Third, future research should develop the current theoretical framework in this study to determine its applicability in other economies. Our sample is mainly from an emerging economy (China). Although our data can explain the relationship between digital business strategy and strategic entrepreneurship in emerging economies, whether it can be extended to developed economies is unknown. Therefore, we propose that future research could test the proposed theoretical framework in developed economies and compare the conclusions with ours. Finally, as for the boundary conditions of digital business strategy and absorptive capacity, except for market and technological turbulence, many other possible variables have not been taken into account, such as the alliance network location (Gulati, 1999) and organizational routines (Feldman & Pentland, 2003). In the future, we should consider more boundary variables so that the research conclusions will have higher authenticity and wider applicability.

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1.評論の発行

1) 『東アジア評論』(以下「評論」という。) は、長崎県立大学国際交流研究センター (以下「センター」という。) の活動成果を公開するための機関誌として、東アジアの政治・経済・社会・文化等に関する研究及び相互交流に関する内容で発行する。
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1) 評論への投稿者は、原則として本学教員とし、共著の場合はそのうち 1 名以上が本学教員であるものとする。
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