

1 Article

## 2 Title: The Dali Model in Risk Management Practice: 3 The Case on Financial Services Firms

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16 **Abstract:** *Purpose* – In this article we lay out the change management practices adopted by financial  
17 firms in small states within the Eurozone. We determine whether these organisations have the  
18 ability to identify triggers for change (Red Flags) and subject them to eight thematic elements to  
19 understand whether management practices can continue to exist and support operational  
20 environments, even when unexpected circumstances affect their day to day operations and  
21 processes. In doing this we examine the extent to which the eight thematic elements from the model  
22 designed by Dalli Gonzi, (2019) (The Dali Model) can assist organisations in risk identification and  
23 business continuity planning.

24 *Design/methodology/approach* – A self-administered questionnaire purposely designed for this study  
25 was administered to personnel working in internal controls within financial institutions of small  
26 Eurozone states. The participants were asked to grade statements using a 5-point Likert scale, '1'  
27 being 'totally disagree' and '5' being 'totally agree' to the statement posed under the thematic  
28 elements forming the basis of the Dali Model.

29 *Findings* – Factor analysis provided support for the eight hypothesised dimensions of the decision-  
30 making model: connection, capacity, governance, network, policy, training, process improvement,  
31 standards.

32 *Originality/value* – The study provides a better understanding and support of "best practice" in  
33 change management through an understanding and assessment of the eight factors that are the basis  
34 of this model. It addresses practical recommendations to ensure application to a wider frame of use.

35 **Keywords:** Change management; Decision-making model, Risk management, Resource  
36 management, Process improvement, Good governance.

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### 39 1. Introduction

40 In general, organisational problems that call for large scale change, happen under hard or  
41 unexpected circumstances that require a rapid recourse to action. Yet, in such cases protocol for

42 operational standards in crisis are set in motion only when the department or organisation concerned  
43 is under extreme strain. In this paper the authors sustain that in many instances, a department is under  
44 strain much before anyone in the organisation acknowledges it, thus causing undesired impact on staff  
45 and other resources, making it difficult for any change to happen in response to what is required. The  
46 reasons for this could be many, ranging from bureaucracy to a 'lassaiz-faire' attitude, to authorities  
47 demanding expectations which are beyond the department's capacity to achieve the change.

48 The eight factors presented here were developed to assist an organisation in recognising that a  
49 response to identify the strain to be equipped to cope with change is what current management practice  
50 should aim towards. In supporting operational environments, authors examine and discuss how the  
51 8 elements support the system by providing a) a just-in-time response; b) identifying the strain under  
52 which the organisation is subject to; c) and the tangible outputs to operations. Case studies, books,  
53 publications, journals, online material including online interviews and their transcripts and literature  
54 were reviewed, together with interviews, and surveys to build the model otherwise referred to as the  
55 Dali Model (Dalli Gonzi, 2019)

## 56 **2. Aim of the study**

57 With this study, the authors' aim is to test the 'Dali Model on Financial Services Firms to determine  
58 whether there is a relationship with better understanding and management of risk by the company.

59 In doing this the authors also examines whether the profile of the participants with respect to these  
60 Eight themes varies as a function of the demographic characteristics of these financial services  
61 firms. The resultant findings are critically discussed and practical recommendations aimed at ensuring  
62 that the true values and qualities of this model emerge.

## 63 **3. Literature Review**

64 A growth in complexity, scale and nature of change is what we face. We are currently in a time  
65 zone best described as a serious threat to the basic structures of fundamental values or norms of a social  
66 system, which under time pressure and highly uncertain circumstances necessitates critical decisions  
67 (Rosenthal U. & Hart, 1989). The crisis can be defined as the organisation's lack of ability to respond to  
68 a heightened situation. Heightened turbulence causes management teams to focus inwards, responding  
69 with tactics that include cutting costs and re-organising. However, these are strategies that happen in a  
70 crisis frame of mind. Key authors in change management literature sustain that when decision-making  
71 time is characterised by limited time, ambiguity and uncertainty and when the need to learn is at its  
72 peak, the institutional capacity/ ability may be disapprovingly low. An organisation may undergo a)  
73 mixed change, b) separate change c) changes and parts that work together without the need for a long  
74 chain of command d) diverse expertise, e) shift from normal tactics f) acting in one's own self-interest,  
75 g) forgetting to adhere to normal practice behaviour h) failing to make use of underutilised resources,  
76 or i) unclear situational awareness. A solution building strategy is one, which is built to withstand  
77 change while accommodating the realisation that all change comes with a manifestation of difference  
78 that requires real-time response. Response depends on how the organisational team can push past a  
79 false sense of complacency, initiate well-timed strategies or policies, which address the situation with  
80 foresight.

81 If a situation is changing rapidly one needs to see what the delivery of a service actually means; (i)  
82 what the 'real time' response is; (ii) what methodical way of response is suitable to meet the  
83 requirements of the organisation as the event unfolds; (iii) what minimum standard of operations can  
84 be delivered at the time of response. In this case it is crucial for the organisation to undergo the strategic  
85 fit with its environment, termed positioning. It is essential for the organisation to take note of the  
86 resources and competence to explore the strategic capacity of the organisation. These tie in with the  
87 importance of viewing citizens as customers. Citizens know when they are truly being given security  
88 and service, and when they are not (Cole, 2000). As we start to look for signs that an organisation is  
89 doing well, so do citizens look for signs that they will receive adequate support. The use of the DALI  
90 model is to provide strategic agility in a rapid response situation. It presents the opportunity to address  
91 the value expectations of actors in society through the re-examining of organisational resources and

92 competences valid at a point in time. Managing requires prioritisation and like resource analysis,  
93 understanding the patterns of provision and how capacity is distributed is an integral part of the model.

### 94 *3.1 Basis for tool development*

95 With a diverse range of demographic and economic pressures, resources required to deliver  
96 services is not as effective as the demands being placed on the service providers. A slow response to  
97 any external change is not acceptable or financially tolerable because of a reliance on undesirable and  
98 burdensome rules, regulations and the overload of paperwork. A method to overcome the stagnation  
99 in decision-making circles is to (a) break down traditional top-down approaches; (b) verbally address  
100 stagnation in staff circles; (c) set limits on the possible project outcomes that are possible from the  
101 organisation; (d) set new barriers for innovation; (e) address difficulties in the organisational capacity  
102 to change; (f) network with a diverse range of stakeholders; (g) be aware of the reliance on elected  
103 politicians to provide resources for investment; (h) address the difficulty for professionals to make  
104 change; and (i) overcome hierarchical management structures (Dalli Gonzi, 2019). The DALI model is  
105 built upon thematic elements extracted from change management literature used to develop a set of  
106 questions tested through a case study approach. The effects of response, resources, structures, output  
107 and network were present as foundational themes. Supporting the initial set of thematic elements were  
108 key knowledge contributors in the field of business continuity management (CMI Institute, 2012),  
109 emergency response management (Cabinet, 2011), and pandemic management. Common to all areas  
110 was the setting of expectations for crisis response services so a consistent and evidence-based practice  
111 was set in place (Carnall, 2007). Emergency management plans described above were generally active  
112 when critical situations were reached, and protocol required the activation of such plans. However, the  
113 threshold between crisis and an arising unexpected circumstance left a gap in planning which included  
114 the ability of an organisation to identify a red flag situation and to activate the eight areas for response.  
115 Additionally, new areas during the data collection phases emerged and findings showed that a reliance  
116 on process improvement, training, and policy feedback ensured a real-time response.

### 117 *3.2 8 thematic elements*

118 The theoretical framework developed from the literature constitutes 5 factors; mainly the resource  
119 capacity within which an organisation is expected to operate; the organisational structure to facilitate  
120 response; the operating environment characterised by elements of complexity; maintaining service  
121 continuity and 'business as usual'. A tool for analysis NVIVO™ was used for data management. The  
122 theoretical framework was then followed by collating case characterisation from three case studies to  
123 explore further each element. A combination of approaches to collect data was utilised: semi-structured  
124 interviews, policy documents and reports. The in-depth nature of the interview process across different  
125 policy areas provided an indication that for increased operational efficiency to begin, challenges to the  
126 structural capacity of the organisations needs to be addressed. Nodes emerging from literature themes  
127 collected and grouped using NVIVO™:

- 128 • Crisis
- 129 • Front-line service
- 130 • Intense environment
- 131 • Organisational structure
- 132 • Public service resources
- 133 • Resilience

134 The thematic elements were supported by key areas discussed in the literature centred around:  
135 areas of timely response (Boin, 2004); broadening resource capacity (Cohen & Brand, 1993); specialist  
136 expertise (Joyce, 1999); structural planning and formation for command and control (Deloitte, 2009);  
137 networking structures (Levy & Lovegrove, 2009) and output services (Public Service Commission, 2011;  
138 Carnall 2007).

139 *Timely response* was built upon an indication that organisational impact, which has serious  
140 implications on capacity, response and timing, happens at a limit, which is not necessarily  
141 'catastrophic'. Recognition of that point of impact is deemed necessary if any resources or specialist

142 expertise is to be brought in. With that recognition ability in place, having a model for decision-making  
143 avoids the element of surprise presenting itself as a threat to response teams (Hosseini & Izadkhah,  
144 2010). Following a recognised critical point, dealing with the provision would mean; (i) postponing a  
145 decision; (ii) waiting for new data or information, or (iii) following through with uncertainty about a  
146 possible outcome. The *Resource allocation* and *capacity distribution* thematic element is built upon the  
147 required strategic decision for outward distribution of people resources at a time of urgent need and  
148 through network channels made available to access resources. This is based upon an understanding  
149 that specialisation is always necessary, as rotas become unsuitable for loads that result from drastic  
150 changes in capacity. This theme was built upon an understanding that critical to response is the  
151 knowledge of by-processes in place for rapid deployment together with the prioritization of those  
152 processes. Authors argue for a process in place for supplies to be moved from supplier to end-user  
153 along a multiple layer of stakeholders (Boin, et al., 2010). In addition, defining the limitations of the  
154 selected processes and identifying which day to day operations require additional support is necessary  
155 for continuity. The objective behind the theme *Structural formation* was the facilitation of a structure to  
156 cope with the critical response needed. The proximity of hubs and networks helped overall response  
157 strategies. Key leaders bringing in specialist knowledge of departmental capacity they had, could be  
158 discussed on the spot and in real-time. Networks proved to be a better form of governance than  
159 hierarchy especially in conditions of uncertainty and complexity. *Self-organising networks* is a concept  
160 which has been developed by Johnson and Scholes (2001). Studies show that network teams converge  
161 very early on towards a decision whilst hierarchical teams take more time due to decision-taking by a  
162 single leader (Schraagen, et al., 2000). This, together with the *design and formation* of a central unit of  
163 strategic thinking, ensures the exchange of practices, staff, resources and management thinking. The  
164 nature of scale and proximity of each management layer meant networks work faster and communicate  
165 effectively. Working as a response unit means defining boundaries and communicating strategy as  
166 effectively and simply as possible, with a predisposition to work with others. Predisposition meaning  
167 tendencies to work with key players prior to building up working relations.

168 Meeting public expectations is critical to any response strategy. As Dalli Gonzi, (2019) shows in  
169 data collated for case study design, the thematic element Output standard service is essential to  
170 response. When objectives change, decision-makers need to bridge between what is happening at  
171 strategy level and what is happening at the scene. This means that policies need to be made adaptable  
172 to the situation at hand to meet requirements. In this case, attaining a standard for service means having  
173 key policies in place to ensure the required changes can happen, thus establishing a feedback loop  
174 between strategy and reality as a solution to bridging the gap. 'Failure to answer people', is the  
175 performance indicator, which should be overcome if the organisational impact has serious implications  
176 on capacity, response and timing but not yet termed 'catastrophic'. Tomkins, (1987) sustains that one  
177 must establish what an effective service is during a period of radical change before establishing its  
178 strategic objectives and goals. Thinking strategically requires incorporating the expected output that a  
179 service can reach, particularly during the organisational impact.

180 The fifth thematic element which is *Network and supporting structures* is preparatory work for a co-  
181 ordinated approach to any response strategy. The movement of resources through pre-established  
182 networks and supporting agencies while working closely with strategic partners including unions,  
183 government, local authorities, private enterprise and the workforce is the major scope. As discussed in  
184 multiple guiding documents in the field of pandemic studies and business continuity management  
185 (McConnell & Drennan, 2006), a multidisciplinary group comprising ethics, medical, legal, public  
186 health, emergency management. In liability protection is appointed to establish indicators following on  
187 regional and state levels to assist in monitoring when crisis occurs. The UK (NHS, 2008 ) ensures that  
188 when faced with disruptive challenges, resilience principles are applied to maintain operational  
189 delivery. Pre-established roles for co-ordination with international agencies is critical to speed up  
190 transactions. This together with a central system for response enables networking to proceed faster,  
191 which works better when nodes and hubs are simplified by size.

192 **3.3 Emergent Themes: - process improvement, training, policy feedback**

193 Throughout the course of the data collection three thematic elements were extracted from the data  
194 (Dalli Gonzi, 2019) and included: (i) Training - the ability to integrate training mechanisms as part of an  
195 on-going resource provision for preparedness; (ii) Policy feedback - integrating policy and guidelines  
196 into a crisis standard guideline of response; (iii) Process Improvement - integrating performance and  
197 output feedback mechanisms directly into front-line response to show that needs are being met.

198 The sixth thematic element *Policy Feedback* showed that it was critical for leaders to know what was  
199 happening at all time and to document all changes being made. It was also necessary to formulate  
200 related policy changes with the necessary feedback. Temporary guidance issued was feeding straight  
201 into policy. As part of the ongoing document collating exercise, all events were recorded, and any  
202 changes were fed back into standard operating procedures. As part of the change-over strategy, service  
203 operational guidance (CFRA, Fire and Rescue Operational Guidance, 2012) was designed to provide  
204 robust yet flexible guidance. Feedback was fed directly to top strategic levels, constantly updated,  
205 allowed for gathering risk information and presented results straight to the Minister without the need  
206 for added bureaucracy.

207 The seventh thematic element titled *Training Procedures*, research showed that there was clear  
208 indication that in order to access appropriate resources for improved capacity management, trained  
209 personnel were needed. In most cases the requirement was specialist trained personnel. Managing  
210 resource demands could be possible only if the required training to facilitate rapid deployment of staff.  
211 Training as part of a response strategy means staff is aware and directly involved in on-the-spot training  
212 programs when needed. Data collated showed that in some case, personnel when required could not  
213 be rapidly called in since they required specialisation. So highly specialised roles could not be taken  
214 over by employees from other departments (Dalli Gonzi, 2019). During a rapid response strategy  
215 training is dependent on the time available for the required training to occur.

216 In formulating *Process Improvement* as the eight thematic element, data collected (Dalli Gonzi, 2019)  
217 showed that response teams required 'fast-track processes' or 'continuity procedures' which would be  
218 designed specifically to enhance processes between service output at front-line and policy-making. A  
219 'fast track process' would ensure that it was possible to override specific protocols in times of rapid  
220 response. In this case, running processes in parallel was key to a successful strategy. Changes reported  
221 at front line had to be directly fed into top management with a resulting change in policy to be followed  
222 through. Setting up a temporary structure was noted to improve processes or access routes for  
223 continuity of service without disruption. The scale and nature of this temporary structure would  
224 depend on the organisational function and leading roles.

### 225 3.4 *Understanding and Managing Risk*

226 Identification of risk is the most important step in risk management. If this fails, then all the risk  
227 process will fail and managing risk cannot be effective. Therefore, it is imperative for a company to  
228 understand what is risk before actually attempting to address it. Accordingly, as Dr. Hillson (2004),  
229 explains, in his paper 'when is a risk not a risk', that risk in a 'nutshell', is defined as "uncertainty that  
230 matters because it can affect one or more objectives". Once this is understood, the management process  
231 can start. That is effective strategies and controls to ensure that objectives that matter are achieved and  
232 that any residual risks are either hedged by transferring it away or other methods (completely or  
233 partially) or accepted.

## 234 4. Methodology

### 235 *The research instrument*

236

237 A self-administered questionnaire was purposely designed by the authors for the present study.  
238 In the process, we discussed with consultants and experts in the field. The introduction page outlined  
239 the objectives of the study, while the 10 sections that followed contained statements/questions with  
240 closed-ended statements, the first section with 4 questions containing the possibility to answer any of 2  
241 questions, related to demographics of the participants' firms. Such information could not have revealed  
242 the identity of firm or respondent and we informed the respondents that such data would be presented

243 in aggregate form and that confidentiality was guaranteed. The next 8 sections held 40 statements  
244 reacting to the following themes explained in the literature above:

- 245 • Connection to the System
- 246 • Resource allocation and capacity
- 247 • Governance and structural formation
- 248 • Service output (Standards)
- 249 • Network team
- 250 • Process Improvement
- 251 • Policy Feedback
- 252 • Training

253 Each theme of the 'Dali Model' (which consisted of 40 statements in total) was explained by 5  
254 statements, where participants were asked to respond to a seven-point Likert scale ranging from  
255 "strongly disagree" (coded as "1") to "strongly agree" (coded as "7").

256 The 10th section related to the participants reaction to the statement on the level of success of their  
257 company in understanding and managing risk. Here again participants were asked to respond to a  
258 seven-point Likert scale ranging from "strongly disagree" (coded as "7") to "strongly agree" (coded as  
259 "1").

260 Statements Q7, Q8, Q9, Q10, Q12, Q13, Q15, Q16, Q17, Q18 and Q19, were not in the same direction  
261 as others, meaning that if participants answered 'strongly agree', this would mean an 'unsatisfactory  
262 result' contrary to the other results which would mean 'satisfactory results'. Therefore, for these  
263 statements, before analysing further, the answers were revised as follows: 1 was changed to 7, 2 was  
264 changed to 6, 3 was changed to 5 and vice versa.

265

#### 266 *Research questions*

267 The questionnaire responses were used to investigate the following research questions empirically:

268 RQ1: Is there a relationship between the Dali Model on Financial Services Firms and better  
269 understanding and management of risk in Financial Services Firms?

270 RQ2: Does this relationship change as an effect of different demographics?

271

#### 272 *Sampling procedure*

273 The authors targeted the whole population of banks (credit institutions), investment services firms,  
274 insurance firms and financial institutions. At a confidence level of 95 per cent, a worst-case true sample  
275 proportion of 5 per cent (for categorical data), the minimum sample size required with these pre-set  
276 criteria was 384 (Lenth, 2012). We used social network systems such as Linked-in and Facebook and  
277 email to invite prospective participants to respond to our survey via a web-link or QR code available  
278 on the social media or contained in the e-mail. The participants had the option to opt out if they felt  
279 they should not participate in the survey. Between January 2019 and August 2019, we received 2343  
280 completed surveys – which met the minimum sample size requirement of 384 (Lenth, 2012).

281

#### 282 *Sample characteristics*

283 16.5% were of the participants worked in Credit Institution (Banks) and 83.5% worked in other  
284 institutions. 30.3% of the firms in which participants worked had 200 and above employees and 69.7%  
285 of these had 199 and below employees. Moreover, these firms had 32.2% had 10 and over employees  
286 working in, and 67.8% had 9 and under employees working in, internal controls – (i.e. legal, Risk  
287 Management, Internal Audit, Compliance). Also 81.8% of these firms were in the EU and 18.2% in other  
288 continents.

289

#### 290 *Data analysis procedures*

291 The respondents' data was inputted into SPSS (Version 20) and subjected to statistical analysis.  
292 Since the items used the ordinal scale of measurement, we used the median (Md) as measure of central  
293 tendency and the inter-quartile range (IQR) as measure of spread. Where a group of items could be  
294 grouped into a construct (or theme), we assessed the internal consistency reliability of the measures via

295 the Cronbach alpha. After the items were combined into a single Likert scale, we computed the mean  
296 (M) as measure of central tendency and the standard deviation (SD) as measure of spread.

297

298 Exploratory factor analysis, via principal components extraction with Direct Oblimin and with  
299 Kaiser Normalization, was assessed by computing the Cronbach alpha coefficients.

300

301 < Insert Table 1 here >

302

303 The Kaiser-Meyer-Olkin (KMO) statistic, which is a measure of sampling adequacy for the  
304 appropriateness of applying factor analysis, fell within the acceptable range (above 0.6), with a value of  
305 0.63.

306

307 This further supported continuance of factor analysis and so the analysis proceeded. Factor  
308 analysis loaded best on 4 factors and 34 statements. Some statements were omitted (i.e. statements Q12  
309 – ‘Resource allocation and capacity: Temporary operational guidance should be designed for the use of  
310 such resources’, Q14 – ‘Resource allocation and capacity: Additional resource stocks are available on  
311 demand’, Q25 – ‘Network team: There is a network of supporting stakeholders to assist in a time of  
312 crisis’, Q29 – ‘Network team: Working with external providers is easy’, Q30 – ‘Process Improvement:  
313 We know what is happening at front-line service delivery’ and Q34 – ‘Process Improvement: Data  
314 collected at front-line operations is processed and used for improving operations’). This was both  
315 because they explain little variance and because they fell under factors which were defined by one or  
316 two variables, making them unstable and generally unreliable (Tabachnick and Fideli, 2001). The factors  
317 were interpreted or omitted cautiously with scientific utility. Therefore, variables that give a low level  
318 of association with several factors at the same time are neglected in the analysis.

319

320 Principal component analysis (PCA) was conducted on the remaining 34 items with Direct  
321 Oblimin and with Kaiser Normalization and four components had eigenvalues greater than Kaiser’s  
322 criterion of one and in combination the factors explained 71.4% of the variance.

323

324 The Dali Model on Financial Services Firms using factor analysis was reduced to four factors and  
325 34 statements. Table 1 shows which statements are grouped under each of the four factors. The pattern  
326 of items loading onto factors after rotation was clear and interpretable. Factor 1, which has now been  
327 termed “Network and Policy Feedback”, explained 24.83% of the variance and comprised 11 items.  
328 Factor 2, which has now been termed “Service and Process Improvement” explained 22.37% of the total  
329 variance and comprised 11 items. Factor 3, which has now been termed “Resource and Governance”  
330 explained 15.58% of the total variance and comprised of 7 items. Factor 4, which has now been termed  
331 “Connection to the system” explained 8.62% of the total variance and comprised 5 items (Hair et al.,  
332 1998).

333

334 The Cronbach alpha revealed that the measures of the factors were internally consistent with scale  
335 reliability (Cronbach’s  $\alpha = 0.76$ ).

336 < Insert Table 2 Here >

337 The Cronbach’s alpha coefficients of this scale were between 0.84-0.98. Therefore, we can conclude  
338 that this scale is reliable as part of our statistical analysis.

339

340 We then computed the Dali Model measure from these 4 factors and 34 statements and carried out  
341 multiple linear regression to determine how the Dali Model measure varies with: 1) (Q45) the  
342 company’s ability to identify the appropriate risks and effectively manage them to reach objectives 2)  
343 (Q1) the type of financial services firms, 3) (Q2) the number of employees, 4) (Q3) the number of  
344 personnel in Internal Controls (i.e. Legal, Risk Management, Internal Audit, Compliance), and 5) (Q4)  
345 whether the financial services firm is in the EU or not.

346

## 347 5. Findings

348 The computed Dali Model measure shows a mean of 5.53 (SD =0.388). All the Factors (1,2,3, 4)  
349 produced means that were close to the computed Dali Model -Table 3.

350

351 The multiple regression analysis [ $F(5,2337) = 449.88, p < 0.01$ ] and the variables explained 49% of  
352 the variability in the Dali Model. The regression coefficients in Table 6 yield some interesting findings.  
353 Firstly, financial services firms who are better able to identify the appropriate risks and effectively  
354 manage them to reach objectives (Q45) score higher in their Dali Model score ( $\beta = 0.051, t = 3.46, p < 0.01$ ).  
355 The Dali Model results are also lower for credit institutions than for other firms (Q1) ( $\beta = -0.59, t = -27.14,$   
356  $p < 0.01$ ) and for firms with larger number of employees (Q2) ( $\beta = -0.293, t = -8.55, p < 0.01$ ). Therefore, if  
357 you are not credit institutions and have less than 200 employees the Dali Model score is higher.  
358 However, if the number of employees in internal controls (Q3) (i.e. Legal, Risk Management, Internal  
359 Audit, Compliance) is 10 and larger and the financial services firm operates in the European Union,  
360 then the Dali Model score is higher (Q4) ( $\beta = 0.47, t = 14.24, p < 0.01$ ; and  $\beta = 0.34, t = 20.18, p < 0.01,$   
361 respectively).

362

363 <Insert Table 3 to 6 here>

## 364 6. Discussion and Significance of findings

365 The results have significant implications for the use of the Dali Model and more broadly for risk  
366 management and internal controls within financial services firms. Firstly, the regression estimates  
367 suggest that the Dali model score is closely associated with a firm's ability to identify and manage risks.  
368 Hence, this provides empirical support to the use of the Dali framework in order to assist businesses as  
369 part of their risk management and compliance activities. The quantitative yet intuitive nature of the  
370 model means that financial services operators may utilize this model as yet another tool in order to track  
371 their risk preparedness and responsiveness over time, by computing and observing their scores.  
372 Secondly, credit institutions appear to perform worse when it comes to their ability to identify and  
373 manage risks relative to other financial services institutions. This underscores the need for such  
374 institutions to strengthen and enhance their risk management functions, perhaps beyond the scope of  
375 existing regulations, since they are currently lagging behind other types of organizations within the  
376 industry. Once again, the Dali model may assist in this regard by providing a simple yet objective metric  
377 with which to assess their progress within this field over time. Similarly, larger firms on average score  
378 worse on the Dali metric relative to smaller firms, suggesting that smaller organizations are better able  
379 to mobilize resources in order to identify and successfully tackle risks as they emerge, with larger firms  
380 potentially hampered by inertia and/or lack of coordination. Thus, it is imperative that larger firms  
381 become nimbler in terms of their risk management processes and functions, and maximize coordination  
382 across functions while also potentially benefitting from economies of scale in this regard. Predictably,  
383 the results also suggest that the size of the compliance team within a financial services firm is positively-  
384 related with risk preparedness as captured by the Dali score, which suggests that firms must seek to  
385 invest more in this important business function. Finally, our results also indicate that financial services  
386 firms based on the EU generally score better on the Dali model, which may in part reflect EU Directives  
387 and regulations in this regard.

388

## 389 7. Conclusion

390 The Dali model is explained in this paper together with its use as a tool for financial institutions  
391 and credit firms to be able to identify the appropriate risks and effectively manage them to reach their  
392 company objectives. Four out of the eight thematic elements were termed as follows: 'Network and  
393 Policy Feedback', 'Service and Process Improvement', 'Resource and Governance' and 'Connection to  
394 the system'. The development of these factors is critical for organisations in recognising the response  
395 required to identify their strain and to be equipped to cope with change. Building upon lessons learned  
396 from emergency and pandemic management, the call for action is for organisations to have the capacity



397 to manage situations of risk. The consequence of failing to respond would be falling under multiple  
 398 pressures without the pre-determined support structures for a rapid counter strategy.

399

400 **Author Contributions:** For research articles with several authors, a short paragraph specifying their  
 401 individual contributions must be provided. All Authors contributed equally to the paper

402 **Conflicts of Interest:** “The authors declare no conflict of interest

## 403 Appendix A

**Table 1: Factors<sup>a</sup>**

	Factors			
	1	2	3	4
Q5 Connection to the System: I can connect with the change my department is experiencing			.979	
Q6 Connection to the system: We are aware of the impact of change on our department			.859	
Q7 Connection to the system: We are currently experiencing a crisis				.801
Q8 Connection to the system: The crisis requires a re-thinking of our organisation				.903
Q9 Connection to the system: The crisis requires new operational guidelines for the department to cope				.890
Q10 Resource allocation and capacity: Resources are being used at maximum capacity				.550
Q11 Resource allocation and capacity: Fast-track additional resources can be easily mobilised				.588
Q13 Resource allocation and capacity: Staff coping capacity is at a maximum			-.512	
Q15 Governance and structural formation: Current governance set-up is not functioning well			.890	
Q16 Governance and structural formation: A temporary team is required to be set up to respond to the crisis	.794			
Q17 Governance and structural formation: A new team leader is needed			.633	
Q18 Governance and structural formation: Current responsibility roles are not defined well enough			.952	
Q19 Governance and structural formation: Management is not effectively carrying out decisions			.903	
Q20 Service output (Standards): We know what is expected of our customer service strategy		.906		
Q21 Service output (Standards): We easily identify the vital (critical) needs of our customers		.929		
Q22 Service output (Standards): We know what dissatisfies our customer		.906		
Q23 Service output (Standards): We carry out operations improvement to ensure any mistakes are mitigated		.933		
Q24 Service output (Standards): We have a consistent service output standard		.836		
Q26 Network team: When a response is required from all stakeholders a centralised system communicates all information two-way	-.785			
Q27 Network team: Business continuity management exists for the organisation	-.812			
Q28 Network team: Strong communication exchange exists to all networks, two-way	-.807			

Q31 Process Improvement: When a crisis occurs, top management are immediately informed of any changes to operational processes		.654		
Q32 Process Improvement: The department can handle normal day to day operations alongside a crisis, efficiently		.656		
Q33 Process Improvement: Data collected at front-line operations is communicated to top management immediately		.652		
Q35 Policy Feedback: All changes to processes are directly fed into departmental policy during a crisis		-.918		
Q36 Policy Feedback: A specialised group of advisors handle the process of policy preparation		-.784		
Q37 Policy Feedback: When policy-makers are not experiencing the situation as is, someone in the department gets directly involved to takeover		-.916		
Q38 Policy Feedback: A leader is visible and accountable to any changes during a crisis		-.921		
Q39 Policy Feedback: A leader is contactable for policy feedback and improvement during the entire changeover		-.923		
Q40 Training: Specialists handle crisis situations		.802		
Q41 Training: There is a rapid deployment for staff training when crisis happens		.840		
Q42 Training: Training is an integral part of any business continuity plan		.808		
Q43 Training: Training needs are always identified before any response strategy		.870		
Q44 Training: Resources from other departments are easily deployed when staff requirements fall short		.758		

404 Extraction Method Principal Component Analysis

405 Rotation Method Oblimin with Kaiser Normalisation

406 \*Rotation Convergence in 5 Iterations

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408 **Table 2** Cronbach's Alpha Values (n=2343)

Factor	Item	Mean	Standard Deviation	Cronbach's Alpha
1	11	5.06	0.95	0.84
2	11	6.78	0.47	0.94
3	7	6.11	0.56	0.93
4	5	4.13	1.00	0.84

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**Table 3: Dali Model**

	N	Mean	Std. Deviation
Factor 1	2343	5.0669	.95351

Factor 2	2343	6.7858	.47750
Factor 3	2343	6.1125	.56321
Factor 4	2343	4.1384	1.00186
DaliModel	2343	5.5259	.38855
Valid N (listwise)	2343		

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412 **Table 4****Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.700 <sup>a</sup>	.490	.489	.27766

a. Predictors: (Constant), Q4Continent in which the Financial Services Firm Operates, Q45Identifying and Managing Risk: The company is able to identify the appropriate risks and effectively manage them to reach objectives , Q3Number of Personnel in Internal Controls, Legal) (Risk Management, Internal Audit, Compliance), Q1Type of Financial Services Firms, Q2Number of Employees

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416 **Table 5****ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	173.414	5	34.683	449.876	.000 <sup>b</sup>
	Residual	180.169	2337	.077		
	Total	353.583	2342			

a. Dependent Variable: DaliModel

b. Predictors: (Constant), Q4Continent in which the Financial Services Firm Operates, Q45Identifying and Managing Risk: The company is able to identify the appropriate risks and effectively manage them to reach objectives , Q3Number of Personnel in Internal Controls, Legal) (Risk Management, Internal Audit, Compliance), Q1Type of Financial Services Firms, Q2Number of Employees

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421 **Table 6****Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.879	.051		114.694	.000

Q4 Identifying and Managing Risk: The company is able to identify the appropriate risks and effectively manage them to reach objectives	.016	.005	.051	3.461	.001
Q1 Type of Financial Services Firms	-.584	.022	-.558	-27.137	.000
Q2 Number of Employees	-.248	.029	-.293	-8.550	.000
Q3 Number of Personnel in Internal Controls (Legal Risk Management, Internal Audit, Compliance)	.390	.027	.469	14.240	.000
Q4 Continent in which the Financial Services Firm Operates	.342	.017	.339	20.181	.000

a. Dependent Variable: Dali Model

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472