DETERMINANTS AND PRACTICES TOWARDS CYBER SUPPLY CHAIN PERFORMANCE WITH CYBER SUPPLY CHAIN VISIBILITY AS A MEDIATOR

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DOCTOR OF PHILOSOPHY

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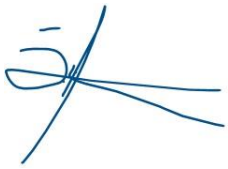
I hereby declare that I have checked this thesis, and, in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Doctor of Philosophy



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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Industri pembuatan ialah salah satu industri yang paling disasarkan untuk serangan siber, menyebabkan kerugian berjuta-juta dan menjejaskan infrastruktur kritikal negara. Di sebalik inisiatif yang diambil oleh kerajaan Malaysia, Malaysia menduduki tempat ke-11 negara paling banyak pelanggaran rantaian di dunia. Justeru, kajian ini dijalankan untuk memberi penerangan tentang tahap kesediaan industri pembuatan Malaysia dalam menghadapi gangguan dalam rantaian bekalan siber (CSC) mereka. Di samping itu, pemacu untuk pengurusan risiko rantaian bekalan siber (CSCRM) diamalkan dan memahami jenis dasar, tindakan dan kesediaan sistem yang perlu dilaksanakan untuk mencapai keselamatan, ketangkasan, keteguhan dan daya tahan keseluruhan rantaian bekalan turut diterokai. Oleh itu, rangka kerja teori tentang peranan pengantara keterlihatan CSC dengan amalan CSCRM dan prestasi CSC telah dibangunkan dan diperiksa secara empirikal melalui kajian ini. Kaedah tinjauan digunakan untuk mengumpul data daripada firma pembuatan yang berdaftar dengan FMM. Sebanyak 130 data responden telah dianalisis menggunakan perisian SPSS versi 24 dan SmartPLS 3.2.8 untuk menjawab objektif kajian yang ditetapkan. Selain itu, peranan keterlihatan CSC sebagai pengantara dalam mencapai prestasi CSC turut diuji. Walaupun ramai sarjana telah berteori bahawa tahap keterlihatan CSC adalah ukuran yang berguna untuk firma menilai keberkesanan amalan CSCRM yang telah dilaksanakannya untuk meningkatkan prestasi CSCnya, melalui kajian ini, ia telah berjaya dikaji secara empirik. Hasilnya menunjukkan bahawa keterlihatan CSC menjadi pengantara antara amalan CSCRM dan prestasi CSC. Selain itu, terdapat juga hubungan langsung yang kukuh antara keterlihatan CSC dan prestasi CSC seperti yang diteorikan, memberikan pengesahan kepada firma pembuatan bahawa pelaburan dan dasar yang dirangka untuk meningkatkan keterlihatan CSC akan berjalan lancar dalam mencapai rantaian bekalan yang berdaya tahan, teguh, tangkas dan selamat. Walau bagaimanapun, tahap penggunaan amalan CSCRM dalam kalangan firma pembuatan di Malaysia mempunyai tahap median empat, menandakan peluang yang mencukupi untuk mendidik dan menguatkan keselamatan CSC dalam industri pembuatan di Malaysia agar dapat menahan serangan berniat jahat yang semakin meningkat.

ABSTRACT

Manufacturing industry is one of the most targeted industries for cyberattacks, causing losses in millions and jeopardizing nations critical infrastructure. Despite the initiatives taken by Malaysian government, Malaysia ranks 11th most breached countries in the world. Thus, this study was undertaken to shed light on the preparedness level of Malaysia's manufacturing industry in facing disruptions in their cyber supply chain (CSC). In addition, the drivers for cyber supply chain risk management (CSCRM) practices adoption and understanding what kind of policies, actions and system readiness should be in effect to achieve the security, agility, robustness, and resilience of the entire supply chain was also explored. As such, a theoretical framework on the mediating role of CSC visibility with CSCRM practices and CSC performance was developed and examined empirically through this study. A survey method was used to gather data from manufacturing firms that were registered with FMM. A total of 130 respondents' data was analysed using SPSS version 24 and SmartPLS 3.2.8 software to answer the research objectives stipulated. In addition, the role of CSC visibility as a mediator in achieving CSC performance was also tested. While many scholars have theorized that the CSC visibility level is a useful measure for the firm to assess the effectiveness of the CSCRM practices it has implemented to improve its CSC performance, through this study, it has been successfully examined empirically. The result indicated that CSC visibility does mediate between CSCRM practices and CSC performance. Moreover, there is also a strong direct relationship between CSC visibility and CSC performance as theorized, giving affirmations to manufacturing firms that investments and policies devised to improve CSC visibility will fare well in achieving a resilient, robust, agile, and secure supply chain. However, the adoption level of CSCRM practice among the manufacturing firms in Malaysia has a median level of four, signifying ample opportunity to educate and amplify the CSC security within the manufacturing industry in Malaysia to be able to withstand growing malicious attacks.

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